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No. XIV. OF VOL. I., 1927. No. 5405. Vol. CCXII. LONDON, SATURDAY, APRIL 2, 1927 Founded 1823. Registered as a Newspaper. Published Weekly. Pp. 120—Price 1s. Annual Subscription Inland £2 2s. Abroad £2 10s.

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Lettsomian Lecture

ON THE

SURGERY OF THE SPINAL CORD AND ITS MEMBRANES.

Being the Third Lettsomian Lecture in 1927, delivered before the Medical Society of London on March 21st, 1927,*

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OF all the ills that human flesh is heir to, there is none more terrible to bear, by the patient, by the relatives, and by the medical attendant himself, than continuous pain beyond relief by ordinary therapeutic measures. Of such as these are the pain of inoperable malignant disease, especially that of the vertebral column and the visceral crises of tabes dorsalis. It is not to be wondered at, therefore, that attention has been directed to surgical measures in an attempt to find relief for the intractable pain of the one, and the repeated attacks of pain and vomiting of the other.

SURGICAL MEASURES FOR THE RELIEF OF PAIN.

Dana was the first to propose the division of posterior spinal nerve roots for the relief of severe neuritic pains, and William Bennett was the first to carry out, in 1888, the suggested operation. He was followed by Abbe and Munro, Horsley, Chipault, Demoulin and Monod, and Giordano, all of whom operated for inveterate neuralgia, and by Faure, in 1889, who operated with success for pain in a case of inoperable carcinoma uteri. Since its introduction it has been performed very frequently with varying success, chiefly for inveterate neuralgia following upon injury or after amputations, and for the excruciating pain in malignant disease of the spine. In 1900, Mingazzini suggested that the posterior nerve roots should be cut for the relief of severe lightning pains in tabes. This suggestion was not acted upon until 1908, when, at Förster's request, Küttner, in a two-stage operation, cut the seventh, eighth, ninth, and tenth dorsal posterior nerve roots in a patient suffering from gastric crises, with extraordinarily good results. Previous to this date, however, Vallas and Cotte, in 1906, had treated a case of severe gastric crises by stretching the solar plexus, with complete relief for four months.

Reference may be here made to intradural and epidural injections of various substances for the relief of gastric crises and lightning pains in tabes. Lippmann advised the injection of 5 c.cm. of 1 per cent. solution of sodium bromide into the subarachnoid space, while Hauptmann practised air replacement in the spinal subarachnoid space after withdrawing 90 c.cm. of cerebro-spinal fluid. Both methods have failed of any result when used at the National Hospital. Lévy, Pope, and Brissaud have advocated the injection of fibrolysin, water, alcohol, and stovaine into the spinal subarachnoid space, while Sicard and Cathelin recommend that the injections should be epidural. Paravertebral injection of alcohol into the splanchnic nerve has also been tried. Carmichael, at the National Hospital, has used an intravenous injection of hypertonic saline solution (30 c.cm. of a 30 per cent. solution) in a number of cases with immediate good results in the majority of cases. No such result was obtained when normal saline solution was used as a control. The improvement, however, was not permanent, the vomiting remaining unchanged, though it sometimes appeared as if the pain were lessened.

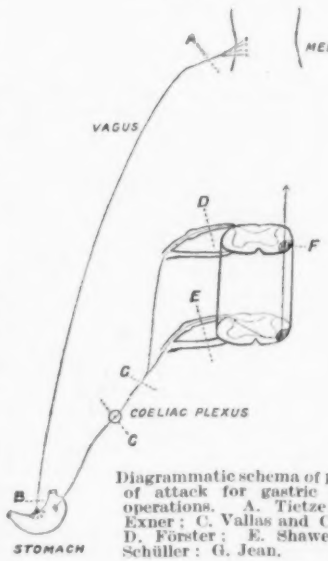
* The first and second Lettsomian Lectures appeared in THE LANCET of Feb. 26th and March 12th respectively.

SECTION OF THE POSTERIOR ROOTS.

Förster's recommendation of posterior spinal root section is based on his conception that the visceral crises are due to an exalted reflex action, and that in order to inhibit this it is necessary to break the nervous arc upon which it depends. In his opinion the primary cause of gastric crises is an irritation of the sensory sympathetic fibres from the stomach, which fibres enter the spinal cord through certain of the posterior nerve roots. These sensory sympathetic fibres pass to the cœliac plexus, then by the rami communicantes to the seventh, eighth, and ninth dorsal posterior spinal roots and from these to the cord. It should be remembered, however, that Förster gave warning that all cases of gastric crises without any pain should be regarded with suspicion and as unsuitable for section of posterior nerve roots. He regards these as of vagal origin.

Various modifications of Förster's operation have been tried since its introduction. Pal recommends on anatomical grounds the section of the rami communicantes, Francke, in a case where root section had been refused, obtained complete success by a slow avulsion of the corresponding intercostal nerves. After cutting the seventh, eighth, and ninth intercostal nerves on each side, he twisted out the central end until he reached the ganglion and thus destroyed the rami communicantes. Dujarrier reports the same result in a case similarly operated on by Maire, of Vichy. Guleke and Lamprecht advise extradural root section, while Von Franke-Hochwart contented himself with intercostal nerve section alone, which was quite unsuccessful. Bierens de Haan, in 1910, reported a case in which transient paralysis, with retention of urine and fæces, and trophic troubles, followed upon posterior root section for gastric crises.

FIG. 1.



Diagrammatic schema of points of attack for gastric crisis operations. A. Tietze; B. Exner; C. Vallas and Cotte; D. Förster; E. Shawe; F. Schüller; G. Jean.

In spite of the many brilliant results reported from root section, Förster, in 1910, turned his attention elsewhere and persuaded Tietze to cut the sensory roots of the vagus at their medullary origin, but the result was fatal. In 1911, Exner divided both vagi in two patients, following it with a gastro-enterostomy to overcome the paralysis of the stomach, but the operation was ineffective. Cotte resected the gastric branches of the vagi in three cases, all of which were failures. (Fig. 1.) Thomsen, in 1924, repeated this operation, with a success of one year's duration. Jean, in 1921, on theoretical grounds, advocated either resection of the thoracic ganglia or cutting the great splanchnic nerve. He performed the operation by a posterior extrapleural route on dogs and the dead body, but never put it into actual practice. Critchley and Wolfsohn report five cases of posterior root section, in only one of which was there any improvement.

The objective and subjective sensory phenomena persisting after posterior root section have occasioned a good deal of speculation, and various attempts have

been made to explain them. The frequent reappearance of the pain, even after the most extensive root section, has led Critchley to ask whether the intensity of the pain stimulus produces an overflow into other conduction paths. Leonard Kidd, in 1911, concluded that afferent fibres exist in the spinal ventral roots of man. Lehmann, in 1920, from the results of posterior root section in dogs came to the conclusion that pain sensations probably travelled via the anterior roots. Shawe, in 1924, basing his conclusions upon a large amount of original work conducted along clinical and experimental lines, thinks the operative treatment of gastric crises should comprise section of both anterior and posterior nerve roots.

This has been put to the test at the National Hospital by my colleague Sargent in two cases. In one he cut the fifth to the eighth posterior roots on both sides, and the fifth and seventh anterior roots on the left side, and the fifth, sixth, and seventh anterior roots on the right side. In the other case he cut the seventh, eighth, ninth, tenth, and eleventh anterior and posterior roots on the right side only. In the first case the attacks of pain and vomiting returned within a few weeks of the operation and persisted unchanged for a year. There was no alteration in the nature or severity of the crises. Then they ceased for a year and a half, after which intense pain reappeared but with no associated vomiting. In the second case pain and vomiting persisted, although the character of the pain was somewhat modified after the operation.

So popular had posterior rhizotomy become that Hey Groves, in 1911, summed up the current opinion of the procedure as follows: "For the relief of visceral crises the operation holds out the only prospect of radical cure which we know at present."

That "present" was to be of short duration. In 1917 Frazier stated that of all cases reported as operated on by posterior root section, only 19 per cent. could be claimed as cures, while the operation mortality stood at 15·7 per cent. Leriche, in 1922, went still further and stated that he had never seen tabetic crises disappear even after the most extensive posterior root section, a section in some cases extending to seven or eight roots on each side.

Apart from the possible failure of posterior rhizotomy for the cure of pain and its probable uselessness in gastric crises, there are two serious disadvantages, one surgical and the other functional, attached to the operation. Owing to the wide overlapping of sensory nerves and the usually wide area of pain, the division of several consecutive roots probably on both sides is required. This necessitates an extensive laminectomy, often upon a bad operative risk. While loss of pain and temperature sense is no inconvenience, yet the loss of sensations of touch, motion, and position is a very definite handicap. To overcome this it has been suggested that every third root be left. But such a manœuvre will result in the pain not being completely abolished.

PARTIAL DIVISION OF THE SPINAL CORD.

It was owing to the equivocal reports upon the results of the operation of posterior root section, results which showed a rapidly increasing percentage of failures, that led Schüller, in 1910, to suggest that a partial division of the spinal cord might be employed instead of root section in gastric crises and spasticity. He thought that the posterior columns might be cut for spasticity, either alone or with the direct cerebellar tract; and that the anterolateral tract might be cut for gastric crises.

In 1910 Cushing had suggested "the deliberate transection, either of the entire cord or of the posterior columns alone, cephalad to the lesion" for intractable and excruciating pain from malignant spinal metastases. He performed such an operation in 1916, dividing the cord in the thoracic region with an entirely satisfactory result. Previous to Cushing's operation, I had followed the same procedure in March, 1916.

The patient, a New Zealander, received a shrapnel wound of the spine at Gallipoli. A laminectomy at the level of the twelfth dorsal and first and second lumbar vertebræ had been performed, shrapnel removed, and the cauda equina sutured. He was admitted to the National Hospital under the care of Risien Russell, with a complete flaccid paralysis of the lower limbs, with marked muscular wasting, and retention of urine and fæces. He suffered from intense pain in the lower limbs, especially in the upper part of the thighs, and in the lower part of the abdomen.

At operation the cauda equina and lower end of the spinal cord were found enveloped in a mass of scar tissue. I did a transection of the whole cord immediately above the lesion, and cutting through the roots below removed the lower end of the cord. There was complete loss of pain, he was able to do without morphia, and left the hospital much improved.

SECTION OF THE ANTEROLATERAL COLUMN.

In 1911 Spiller as a result of his observations on a case to be referred to later, was led to propose section of the anterolateral column for intractable pain in a case of malignant growth in the spinal cord. The operation was performed by Martin on Jan. 19th, 1911, both anterolateral tracts being divided to a depth of about 2 mm. at a point opposite the seventh dorsal vertebra. Pain was much diminished and a year later Spiller regarded the result as successful.

At Spiller's suggestion, Cadwalader and Sweet undertook some experiments on dogs to show the effects of cutting the anterolateral tract. In their cases, motor paralysis was noted immediately following the operation, but it disappeared very rapidly and was replaced by marked ataxia. As microscopically no injury was found in the pyramidal tract and von Monakow's bundle, they assumed the transient paralysis to be due to a temporary vascular disturbance.

The second occasion on which section of the anterolateral tract was performed was in 1912 by Beer for the relief of pain due to metastases from uterine carcinoma. The operation was done at the level of the tenth dorsal vertebra and gave complete analgesia and loss of cold perception on the right side up to the level of the pubes. The pain in the back, however, was not relieved. Later, the operation was performed by Tietze at the suggestion of Förster, and in 1920 Frazier reported six cases upon which he had operated, all for pain due to malignant disease or following gunshot wounds.

Souttar was the first to do an anterolateral section for gastric crises in tabes. He operated on a patient of Sydney Owen's at the West London Hospital in 1915. It was a unilateral section on the right side between the first and second dorsal segments. The result was immediate relief of symptoms, which relief had persisted for ten years. Since then, operations, either unilateral or bilateral, have been reported by Leighton, Sachs, Grant, Nonne, and Tietze for the gastric crises of tabes, and by Peet, Sicard and Robinson, and Frazier for intractable pain due in most cases to inoperable malignant disease. The results, especially in the latter type of case, have been on the whole very successful.

On what anatomical grounds is the operation of anterolateral tract section based?

ANATOMY.

The ascending or centripetal tracts have their cells of origin in the posterior root or spinal ganglia. These cells are connected peripherally by means of fibres running in the nerve trunks with the various peripheral organs found in the skin, mucous membranes, mesentery, articular surfaces, muscles, and elsewhere. Centrally the fibres from the cells of the posterior root ganglia pass by way of the posterior roots into the spinal cord. In the cord their further course may be a short, medium, or long one. The short fibres pass directly through the marginal zone of the posterior horn into the grey matter, when they end by arborising among the cells of the posterior and anterior horns of the same side of the cord. The medium fibres pass through the segment of entry into the posterior columns and from thence into the dorsal horn of the same side, ending in Clarke's column. The long fibres pass through the segment of entry into the posterior columns and passing upwards

terminate in the nuclei of the dorsal columns in the medulla.

The endogenous tracts of the spinal cord include the centripetal fibres of the second order and the so-called intersegmental tracts. The latter serve to connect the grey matter of successive segments of the cord. Under the former are included those fibres which provide for the further conduction towards the sensorium of impulses received through the elements of the posterior roots which have already terminated in the cord. They include the dorsal spinocerebellar or direct cerebellar tract, the ventral spinocerebellar, anterolateral ascending or Gowers' tract, and the spinothalamic tract. These, together with the crossed pyramidal tract and lateral ground bundle, constitute the lateral column of the cord. Their relative position is as follows: (Fig. 2) in the hinder part of the lateral column, occupying a somewhat triangular area, is the crossed pyramidal tract. External to this and occupying a narrow area at the periphery of the cord which extends backwards to the postero-lateral fissure is the direct cerebellar tract. Gowers' tract, an extensive crescent-shaped strand, occupies the anterior three-quarters of the periphery of the lateral column. Behind, where it is thickest, it lies in the angle formed by the direct cerebellar and crossed pyramidal tracts, becoming thinner as it passes forwards. The spinothalamic tract is situated opposite the base of the posterior horn and lies in close apposition to the inner side of Gowers' tract. (Fig. 3.) It is a crossed sensory tract, whose fibres are the axons which arise from certain cells in the posterior horn, and crossing to the opposite side of the cord through the anterior commissure ascend in the anterolateral

FIG. 2.

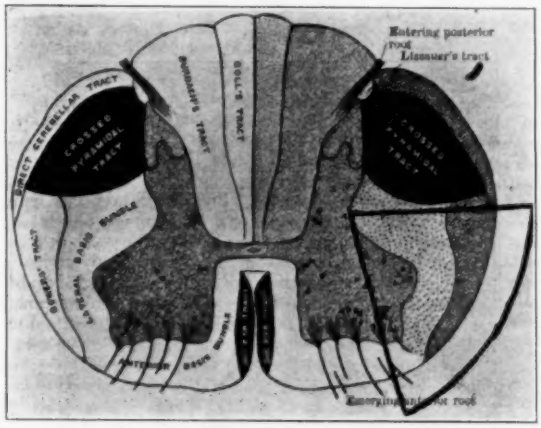


Diagram showing relative positions of tracts in the spinal cord and area involved in anterolateral section. (Cunningham's anatomy.)

column, finally reaching the optic thalamus. They are not gathered into a compact bundle, but are more or less loosely scattered in the lateral column. The rest of the lateral column of the spinal cord is occupied by the lateral basis or ground bundle. It surrounds the anterior horn and separates the aforementioned tracts from the grey matter of the cord. It consists of (1) longitudinal commissural fibres, which unite the groups of cells in the grey matter with one another, (2) fibres which pass across the anterior commissure from the grey matter of the opposite side, and (3) horizontal fibres belonging to the anterior roots of the nerves, which pass through it before leaving the cord.

THE SENSORY APPARATUS OF THE SPINAL CORD.

In order to reach the sensorium, sensory impulses, originating in the trunk or limbs, make their way into the spinal cord through the spinal ganglia and the posterior nerve roots. These impulses have to do with tactile sensibility, sensibility to pain, temperature sense, and deep sensibility. The fibres which serve for the conduction of sensory impressions of the above four categories separate from each other immediately after entering the cord. Or, in other words, each one

FIG. 3.

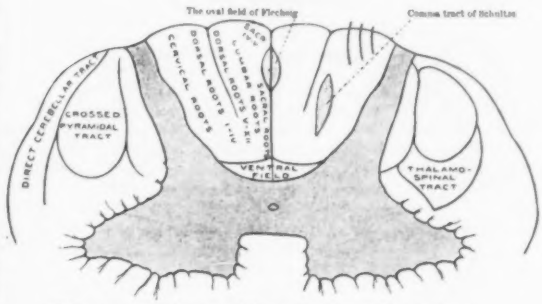


Diagram showing position of spinothalamic tract. (Cunningham's anatomy.)

of the specific impulses, such as pain, touch, heat, and cold, has its own tract in the spinal cord devoted to its conduction. Brown-Séquard, about 75 years ago, stated that division of one half of the spinal cord caused loss of sensibility to pain on the side opposed to the lesion, and that motion was affected on the same side. Though his statement has been attacked from time to time, both by clinicians and experimental physiologists, nevertheless the close relation between the impulses for sensations of pain and temperature has long been universally recognised. So that whatever may happen to the impulses which underlie other forms of sensibility, there can be little doubt that in man those for pain, heat, and cold cross to pass up the opposite side of the spinal cord. But, as Head and Thompson point out, although the impulses for pain, heat, and cold are so closely associated in their passage up the spinal cord on the side opposed to their point of entry, they do not travel inextricably intermingled. Moreover, and this is of outstanding importance in connexion with our subject, they found that when sensibility to pain is abolished from an intramedullary lesion no normally painful stimulus will produce a painful afferent impulse. The question of the conduction of tactile stimuli would appear to be still sub judice. Mann supposes that tactile impulses pass up any open centripetal path, and that so long as fibres are present for the transmission of centripetal stimuli, these can be followed by the tactile sensations, even although the posterior columns mainly subserve this function. Pétren, Borchert, Rothmann, Bing, and others also assume a crossed and an uncrossed tract for the transmission of tactile sensations.

Head and Thompson sum up their conclusions as follows:—

"Tactile, painful, and thermal impulses, and those associated with tactile localisation, cross in their passage through the spinal cord, and show evidence of recombination. But the sensory impulses which underlie the recognition of passive position and movement and tactile discrimination do not cross within the limits of the spinal cord."

They think, however, that for tactile impulses the crossing is less rapid than for the others. And until this crossing is finally completed, that two paths will be open for tactile impulses, one in the primary system of the posterior columns, the other in the secondary intramedullary system, in which they will have been recombined into a specific group, associated with all forms of tactile sensibility.

Conduction of Painful Impulses.

At present, however, we are concerned with the conduction of painful impulses within the spinal cord. Are fibres for pain confined to one system within the spinal cord, and if so, can pain sensations be abolished

There is an apparent discrepancy at this point.

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by ablation of this system? And can pain sensations be conveyed by other systems when the fibres usually employed for this purpose are destroyed?

Head and Holmes put the matter clearly as follows:—

"Within the spinal cord all impulses capable of generating pain become grouped together in the same path and can be disturbed simultaneously by an appropriate lesion of the spinal cord. In the same way sensibility to heat or cold

FIG. 4.

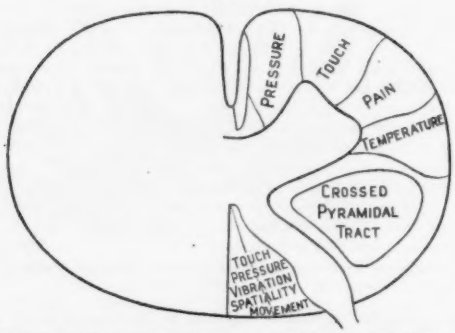


Diagram showing Förster's provisional arrangement of sensory tracts in the spinal cord.

may be lost independently of one another, showing that all the impulses on which they are based have been sorted out into two functional groups, each of which passes by a separate system in the spinal cord. It should be possible, therefore, to divide the tracts for the conduction of pain with little damage to the rest of the cord, except that the fibres for temperature would probably be implicated. It is questionable whether objective disturbance of sensation would be produced by such an operation, and if so, whether it would be persistent."

How rapidly does the crossing of the fibres conveying painful impulses take place in the spinal cord? Head and Thompson think that the impulses produced by painful pressure from the same part of the body do not enter the cord by the same posterior roots as those carrying the impulses produced by cutaneous painful stimuli. Therefore that more than one segment of the cord is required before all the painful impulses from any one part of the body can be gathered together and recombined. Piltz thinks that impulses associated with pain, heat, and cold seem to pass completely to the opposite side in the space of five or six segments. Opinions, however, differ as to how many segments are involved in the crossing, though most observers consider that two, three, or even five segments are necessary.

Förster in his work published this year says, as a result of his investigations, that "the crossing does not take place in the horizontal plane, but in a steeply ascending direction. The fibres coming from one segment of the posterior horn cross in the territory of the segment immediately above, and the crossing is completed by the upper end of this latter segment." For instance, he found that after section of the anterolateral tract at the upper end of the third dorsal segment, there resulted a total analgesia and therm-anæsthesia in the fourth dorsal dermatome; and that after section at the upper end of the sixth cervical segment anæsthesia and analgesia were complete in all segments up to the seventh cervical. And that after bilateral section of the anterolateral tract at the upper end of the fifth thoracic segment all the dermatomes from the sixth dorsal to the third sacral were analgesic and therm-anæsthetic. In these three cases, therefore, the crossing was complete within the length of one segment.

It may be said that, as a general rule, there is no other path for pain and temperature sensation except the crossed path in the anterolateral columns. In 1879 Gowers suggested that the fibres conveying pain and temperature sensations passed up the cord in the tract which bears his name, and in 1893 van Gehuchten stated it as a definite fact. In 1904 Spiller was able to give clinical proof of the correctness of these opinions in a patient with complete loss of sensation for pain and temperature in the lower limbs, with preservation of tactile sensibility. At his death in 1905, necropsy revealed a solitary tubercle involving the right Gowers' tract at the lower end of the thoracic cord, and slightly above this another solitary tubercle implicating the left tract of Gowers. Förster records a personal experience in which, while giving an injection of novocaine for intercostal neuralgia, the needle passed through an intervertebral foramen and the dura and impinged upon the cord. The patient at once complained of terrible pain in the leg of the opposite side. He says that he has frequently observed that pricks, cuts, or light touches on the anterolateral tract of the exposed cord causes severe pain in the opposite leg, while similar manipulations of the posterior columns were completely free from any reaction. Spiller, Taylor, Greenfield, and Martin have described cases of syringomyelia in which the severe pain can only have been due to an irritation of the lateral tract.

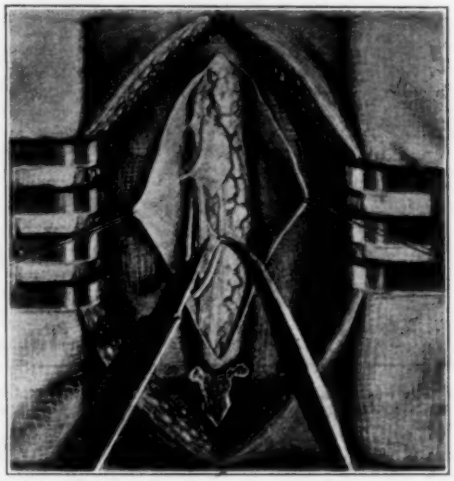
Localisation in the Anterolateral Column.

Knowing that afferent impulses pass up in the anterolateral column, and further, that each specific impulse has a specific tract devoted to its conduction, is there any evidence as to the position which each occupies, both in the column itself and in relation to each other. On these points Förster says:—

"If we must assume a separate region for the paths of pain in the anterolateral column, we, however, do not know exactly, so far, which special area contains the pain and which the temperature sensation. I provisionally place the temperature paths in the dorsal part of the anterolateral tract, and the pain paths immediately in front of them." (Fig. 4.)

Are there other paths, in addition to the long centripetal paths in the posterior and anterolateral

FIG. 5.



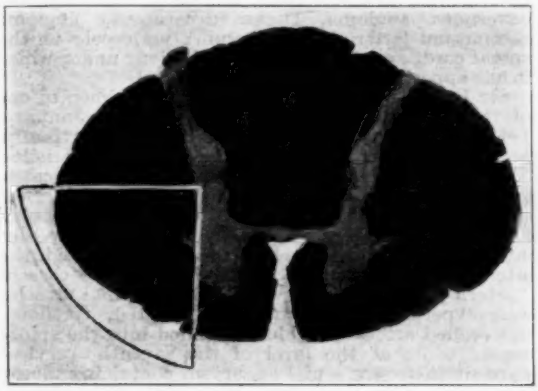
Anterolateral tract section. Cord rotated by forceps grasping cut end of dentate ligament. (Peet).

columns, by which afferent impulses can pass? Karplus and Kreidl, as a result of their researches along the lines formerly taken by Schiff, think that there is another possible path for the conduction of pain—viz., the grey matter. On this point Förster says:—

"The posterior horn columns on both sides obviously form numerous short chains of neurons, which, put together, form a continuous path, which can carry up pain impulses towards the brain on their own side without taking any part in the long ascending tracts, and thus stimuli, which affect either side, can be transmitted by the opposite side of the posterior horn columns." He goes on to say that, "these extra funicular paths for pain through the grey matter are naturally only by-passes."

This would explain those cases in which pain perception has remained after bilateral section of the anterolateral tracts. Frazier thought that in his cases this was due to some of the pain-fibres in the anterolateral tract escaping the knife. Förster, on the contrary, thinks that we must assume that the integrity of pain sensation, in spite of cutting of the anterolateral tract in certain individuals, is due to the existence of a

FIG. 6.



Transverse section of the spinal cord at level of the second dorsal segment showing area involved in anterolateral section.

by-pass. He is in doubt as to whether this is to be looked for in the posterior columns or whether we are to assume a posterior horn path. But on the whole, as a result of the experiments of Schiff, Rothmann, Karplus, Kreidl, and others, he thinks that only the path in the posterior horns can be assumed.

SECTION OF THE ANTEROLATERAL TRACT.

The operation of anterolateral tract section should offer no special difficulties to the surgeon trained in neurological surgery. Exposure of the cord of sufficient extent can be obtained by the removal of two, or at the most three, laminal arches. The dura is opened in the entire length of the wound. The arachnoid is also freely and carefully opened, so as to expose the exact attachment of the ligamentum denticulatum and the emerging anterior root. One of the denticulations of the ligament is cut at its attachment to the inner surface of the dura, and its cut end seized with fine forceps. By steady and gentle traction on it the cord is carefully rotated to expose its anterolateral surface. (Fig. 5.)

The success or failure of the operation depends entirely upon the accuracy with which it is performed. It requires of the operator an accurate knowledge of the microscopical anatomy of the spinal cord and an ability to visualise such anatomy on the surface exposed to view. The chief danger is damage to the crossed pyramidal tract. (Fig. 2.) The section concerns only that part of the lateral column which lies anterior to a point midway between the posterior and anterior roots, and commences just anterior to the reflection of the dentate ligament from the cord. The knife should be carried forward parallel to the anteroposterior axis of the cord and made to emerge through or at the median side of the anterior root. (Fig. 6.) The depth of the incision should be not less than 2·5 mm. nor more than 3 mm. It may be made with a very fine-pointed sharp knife, marked so that a depth of 3 mm. can be accurately determined.

Little or no bleeding results from the incision. Manipulations should be of the gentlest kind and no pressure exerted on the cord during them. The use of a suction apparatus does away with the necessity of sponging and facilitates the performance of the most delicate stage of the operation. Should a bilateral section be indicated, exactly the same procedure is carried out on the opposite side of the cord. The dura is closed by a continuous suture of fine catgut and the muscle layers by interrupted sutures in the usual way. The postoperative treatment is the same as after laminectomy for any other condition, but the nursing is facilitated by the more restricted area of bone removal allowing of freer movement of the patient. The bladder and rectum are almost invariably unaffected and trophic disturbances should not occur.

The level selected to do a section of the anterolateral tract will depend first upon the segmental areas involved in the pain-producing lesion, and, secondly, upon the number of segments necessary for the complete crossing of all the fibres from those areas. Peet says it is essential that the division should be at least four segments above the area to be rendered analgesic. But in cases of upper abdominal pain he also cuts the posterior nerve roots in the exposed field, adding, he thinks, another segment to the analgesic area. But surely this is "making sure doubly sure" with a vengeance. Frazier takes a level at least four segments above the area of the lesion, and adds two or three segments to that, to allow for a possible extension upwards of the pain-producing lesion.

If we are to accept Förster's conclusions published a few weeks ago and already referred to—viz., "that all the fibres coming from one segment of the posterior horn cross in the territory of the segment immediately above, and the crossing is completed by the upper end of this latter segment," it will not be necessary to go so far afield in segmental levels as has been done in the past.

A NEW OPERATION.

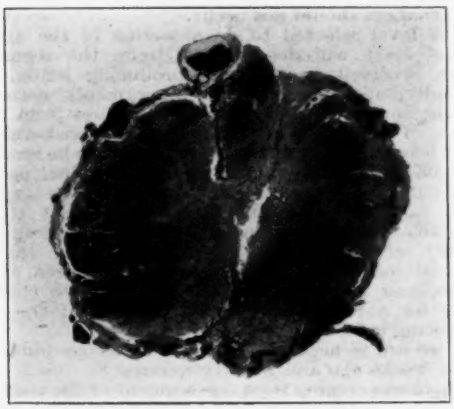
Dr. Godwin Greenfield, of the National Hospital, has suggested a new method of performing chordotomy. The operation consists of a mediolongitudinal section of the cord at the selected level, and is applicable to the same class of case as the anterolateral tract section. (Fig. 7.) It has the advantage over the latter that a bilateral effect is obtained by one incision, which completely destroys *all* the pain-conducting fibres crossing at the level of incision. In pain arising from internal organs, whether due to malignant disease or in gastric crises, no relief is ever obtained from unilateral chordotomy, a bilateral section being always necessary. One-sided section only produces contralateral anæsthesia of the skin and the deep structures, and not of the abdominothoracic cavity. Pain-fibres from the last pass probably by both the anterolateral tracts to the same extent. Spiegel has recently shown that, with bilateral section of the anterolateral tract, visceral sensibility is lost. Moreover, as has been shown, in anterolateral chordotomy some of the pain-fibres do sometimes escape section, resulting in incomplete relief of suffering. Further, mediolongitudinal section has the great advantage that

FIG. 7.

Operation of mediolongitudinal section.

there is no risk of injury to the crossed pyramidal tracts with resulting motor weakness or paralysis, and the long centripetal tracts are untouched. This operation has its special application in painful lesions of the lower limbs and pelvic organs. A mediolongitudinal incision, of about one inch in length, at the level of the eleventh and twelfth dorsal and first lumbar segments, would destroy all pain-fibres coming from the lower limbs and pelvis. Higher up in the cord the length of the incision would obviously have to correspond to the segmental distribution of the pain. Two points in technique are of importance. The incision must be made exactly in the midline of the cord, and the anterior spinal artery, which lies at the surface of the anterior median fissure, must be avoided. The exposure of the spinal cord is carried out in the same way as in laminectomy for other conditions, and its length will be governed by the length of the incision to be made in the cord.

FIG. 8.



Transverse section of the spinal cord showing result of mediolongitudinal section.

FIG. 9.

Telangiectasis of posterior spinal veins, with (inset) enlarged and tortuous vessel on nerve root.

I performed this operation before the inaugural meeting of the Association of British Neurological Surgeons in December, 1926, on a patient suffering from gastric crises in a very severe form. The operation presented no inherent difficulties, and the danger of damaging the anterior spinal artery was obviated by the use of a probe-pointed knife in the last stage of the section, by which means the pia-arachnoid together with the artery was pushed forward and out of danger. (Fig. 8.) Unfortunately, the patient, who was a poor operative risk from years of suffering, died of pneumonia a few days after the operation. Perhaps, too, the occasion was ill-chosen for the first performance of such an entirely new and delicate operation. But of its feasibility and its usefulness in properly selected cases I think there can be no question. It is a testimony, too, to the broad vision of the distinguished neuropathologist who first conceived it.

TELANGIECTASIS OF THE SPINAL CORD AND MEMBRANES.

The condition to which I desire to call attention in the latter part of this lecture has been described under various names by different authors, though none of them venture upon an explanation of its pathogeny. Telangiectasis, angioma, hæmangioma, cavernous angioma, tumor cavernosus, angioma racemosum (arteriale or venosum), varicocele of the spinal cord, are the various designations under which it has appeared.

Sir Bernard Spilsbury exhibited a specimen of one of these conditions before this Society in January, 1921. I say "one of these conditions" advisedly, because they do not all show the same characteristics. The vessels of the pia seem to be involved in all cases, either alone or in association with an extradural or intramedullary extension. In Jumentié and Levy-Valensi's case (Fig. 9) the veins of the spinal canal were also involved, the enlarged veins running out through the intervertebral foramina; whilst in Sargent's case of "arterial angioma," the vertebral and spinal muscles were "permeated by numerous dilated, tortuous, thin-walled arteries," which extended into the spinal canal, while at the level of the seventh cervical segment there was a pial aneurysm containing recent blood-clot. (Fig. 10.) In neither of these cases were the intramedullary vessels affected. In Raymond and Cestan's case (Figs. 11 and 12) the intramedullary vessels, especially of the lower cervical region, were dilated to the same extent as the extramedullary, and showed sac-like dilatations, but the condition did not extend extradurally. Whilst in the case reported by Berenbruch, a large cavernous plexus of veins along the spinal column was connected by way of the intervertebral foramina with an angioma of the dura, and an angioma occupied the cord substance from the fifth cervical to the third dorsal segment.

Pathology of the Conditions.

Is the underlying pathology of these cases the same, and are they simply different stages in the development of the same primary condition? Or have we to do with several different conditions?

Virchow was the first to clearly differentiate between telangiectasis and true angioma. He called attention to a point which Adami emphasised—namely, that telangiectasis is a congenital dilatation of capillaries without any new-formed blood-vessels, while an angioma is a new growth, and is only properly so-called where there is a formation of new blood-vessels. In the majority of the reported cases no mention is made as to whether arteries or veins, or both, were involved in the process, but it would appear that of those in which it was limited to the pia the veins alone were concerned.

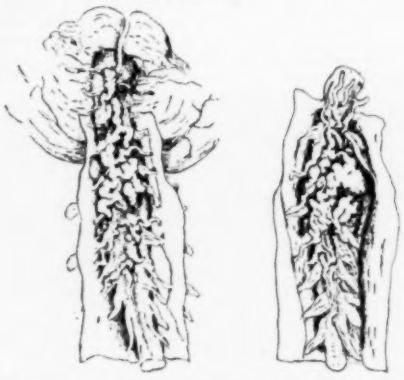
FIG. 10.

Sargent's case of pial aneurysm.

Three theories have been advanced to explain the condition: (1) that it is a congenital anomaly; (2) that it is of neoplastic origin; (3) that it is due to a peripheral constriction with consequent secondary varicosity. Against the theory of a congenital origin

it may be remarked that all reported cases except that of Cobb—in which the patient was 8 years old—have been in adults. Virchow maintained that the condition never occurs in children and was always

FIG. 11.



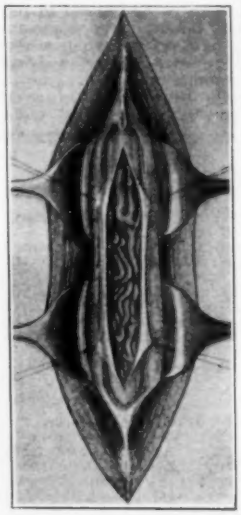
Anterior and posterior surfaces of spinal cord showing dilated vessels.

acquired, but that a pre-existing dysplasia may be the primary cause of the neoplasm.

It is difficult to understand how a peripheral constriction could operate, seeing that the main current of venous blood in the spinal cord would appear to be horizontal in direction, by way of the veins running out along the nerve roots; thus each segment is, as it were, drained by a ring-like arrangement formed by the transverse branches between the longitudinal veins and the offsets proceeding from the latter to the intervertebral foramina.

In most of the cases the vessels on the posterior aspect of the cord would seem alone to have been affected, and the most frequently occurring levels are the cervical and lumbosacral regions. This may be explained possibly by the fact that the spinal veins are larger on the posterior surface and at the lower end of the spinal cord than elsewhere, and further, that the posterior mediolongitudinal vein is largest and most constant in the cervical and lumbosacral regions of the cord.

FIG. 13.



Showing condition usually found on operation for telangiectasis of the spinal cord. (Cobb.)

In some cases trauma or increased exertion have been adduced as a causative factor. Whether the actual cause, or merely causing increased and rapid growth in a pre-existing condition, it is difficult to say. Pilzer thinks the process begins primarily as a hæmorrhage, followed by the formation of new vessels with their subsequent dilatation. Rolleston has raised the question as to whether the dilated vessels were primary rather than secondary, and due to some morbid change in the spinal cord.

Some of the cases have been associated with nævi of the skin. Therefore every case of cutaneous nævus, especially with a segmental distribution, should be carefully investigated with a view to eliciting any possible involvement of the cerebro-spinal nervous system. Such a course might very well show that this condition in the spinal cord is not so rare as is generally supposed. A similar cerebral syndrome is already widely recognised.

FIG. 12.

Showing involvement of the intramedullary vessels in telangiectasis of the spinal cord.

Diagnosis and Treatment.

In diagnosis the clinical history, as Sargent points out, may be of the greatest value. One of the most striking features is the variation in symptoms from time to time. The onset is usually sudden, with rapid development, and the symptomatology is that of hæmorrhage into the spinal cord or canal. Then, in many cases, recovery, complete or partial, follows, with an interval of days, months, or even years before the next attack. Is it not possible that cases may occur with the cause of an attack undiagnosed, followed by recovery, and no further attacks? Sargent's cases are the only ones in which any record of an examination of the cerebro-spinal fluid occurs, and this was done in three cases. Two showed xanthochromia and all three an increased protein content. The condition is usually revealed as a result of an exploratory laminectomy.

If confined to the pial vessels the question may arise of the value of ligation. One is then between the Scylla of doing too little and the Charybdis of doing too much. As a rule, however, the vessels are enormously distended, with extremely thin and friable walls, closely packed together in an inseparable mass. (Fig. 13.) They form, indeed, a veritable noli me tangere, and are better left alone. By leaving the dura unsutured one may hope for relief through the decompressive nature of the operation. But if the symptoms are due in chief part to circulatory changes in the cord, even this hope will prove elusive.

In concluding this my third and last Lettsomian lecture, I desire to acknowledge the great debt I owe in their preparation to Dr. Godwin Greenfield, Pathologist to the National Hospital; to Dr. Arnold Carmichael, sometime Medical Registrar there; and to Dr. Macdonald Critchley, the present holder of that office.

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ANTERIOR SUBLUXATION OF THE ATLAS.

CAN THE CONDITION BE TREATED BY OPERATION?

BY PROF. W. A. OPPEL, HON. F.R.C.S. ENG.,
LENINGRAD.

THE sight of a patient with an anterior subluxation of the atlas arouses a feeling of apprehension. The head is slightly shifted forwards; the patient carries his head as carefully as though it were made of glass and might at any moment be smashed. This helplessness of the head, causing it to be held by the hands of the patient as if to prevent it from falling, at once arouses attention, and has been noted in the recorded cases.

General Observations.

We know what is frequently the sequel of an anterior dislocation or subluxation of the atlas; even in the case of subluxation when the anterior arch of the atlas is moved forward the ligamentum cruciatum becomes strained. In the case of fracture of the dens (odontoid process) the latter with the anterior arch is also displaced in a forward direction; if the dens remains intact it exerts a pressure on the ligamentum cruciatum displaced forwards. And yet behind this ligament, as everybody knows, lies the medulla oblongata.

In case of anterior subluxation of the atlas with the ligamentum cruciatum remaining intact the space allotted to the medulla may be slightly restricted. And such a diminution the medulla is capable of enduring. But if the atlas be moved ever so slightly forwards and the ligament, unable to bear the strain, is ruptured, the medulla will be instantly compressed. And what surgeon does not know that the history of anterior dislocations and subluxations of the atlas is one of sudden death caused by trauma? The number of patients who have not succumbed to such a lesion may be counted on the fingers.

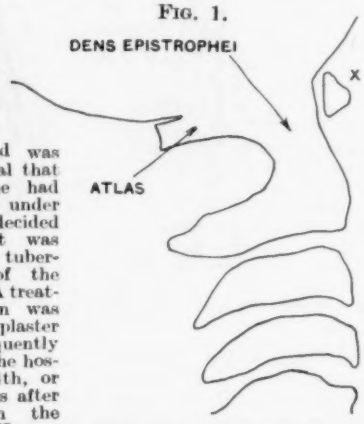
Hence the sight of a patient subject to an anterior subluxation of the atlas causes a most painful impression; the head is expected to slip forward at any moment and fall over, causing instantaneous death. And as a matter of fact such patients live on the brink of death and unfortunately are sometimes reduced to a most helpless condition.

Narrative of a Case.

On August 5th, 1926, a workman, 30 years old, was admitted as patient into the surgical department of the Mechnikov Hospital, Leningrad. The patient was a carrier of heavy weights.

On Jan. 29th, 1925, the patient was carrying a weight of 200 lb. up a staircase to the fifth floor. The weight was carried on his back, and the top of the basket, in which it was stowed, projected above his head. While carrying the weight the patient observed that something had crunched in the inside of his neck without causing pain. Nevertheless, he executed his job and worked on for a couple of hours longer. At the expiration of that time, however, he experienced violent pains in the neck, and being unable to move his head was taken into a hospital that evening. After he had been placed there under observation it was decided that the patient was suffering from a tuberculous affection of the cervical vertebræ. A treatment of extension was carried out, and a plaster bandage was subsequently applied. He left the hospital on April 24th, or nearly three months after his admission, in the plaster bandage. He was treated as an out-patient at the hospital till May 1st, when he resumed his customary work.

FIG. 1.



The radiogram corresponding to this diagram has been abandoned. × = The fragment of the arcus anterior atlantis.

At that time the movements of the head became freer and the pains considerably subsided. He continued working as a carrier, although he was given lighter weights to carry. Occasionally he varied his occupation by working as a clerk. During this interval sometimes the movements of the head became all of a sudden difficult and painful; such relapses generally lasted for a day or two, and then the mobility of the head was restored. All through this period, however, he had to be careful in moving his head. In February of 1926 his head was worse and he was treated at a dispensary as out-patient, when a strain of the cervical muscles was diagnosed. After a week's treatment he resumed his customary work.

On July 27th, 1926, as he was raising a carcass from the floor, he experienced violent pains in his neck in which

LETTSOMIAN LECTURES: BIBLIOGRAPHY.

(*Continued from previous page.*)

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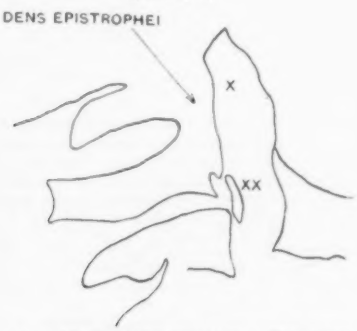
something seemed to have turned. On the morning of the following day (28th) he was unable to move his head. At the dispensary the same conclusion—i.e., strain of the cervical muscles—was reached, and on August 4th he was told that as he had nothing the matter with him he could resume his ordinary work. The patient, however, being dissatisfied with such a decision, was examined by a commission, who gave orders to have him admitted to the Mechnikov Hospital.

FIG. 2 A.

FIG. 2 B.



X = Place of the resection. The fragment of the arcus anterior is absent.
XX = The fragment of the corpus epistrophei.

Condition on Admission.—The patient is above the middle height, strongly built. Holds the head slightly inclined to the right; turns the head with difficulty by a series of jerks. The head cannot be inclined forwards, backwards, or to the sides; rotation extremely painful. Pains in the region of the right scapula. The movements of the upper and lower limbs are free.

On examination in profile, the head seems to be slightly displaced forwards; in walking remains quite fixed. The patient appears to be taking extreme care of his head for fear of its falling forward. On examination of the pharynx with the fingers the projecting arch of the atlas can be easily perceived. It is painful to palpation. A Rontgen plate taken of the profile showed (Fig. 1) (*a*) the space between the spinous process of the epistropheus (axis) and the posterior arch of the atlas which seems to be increased; (*b*) the anterior arch of the atlas displaced forwards. The plate clearly shows that the anterior arch of the atlas is broken off. The dens of the epistropheus is so imperfectly seen that it is impossible to decide whether it is fractured or not. As the head was fixed, the radiographer was unable to take a picture through the mouth.

The patient sleeps poorly; he is troubled with pains in the neck and cannot lay down his head in a comfortable position. Extension and plaster bandages were applied without effecting any improvement.

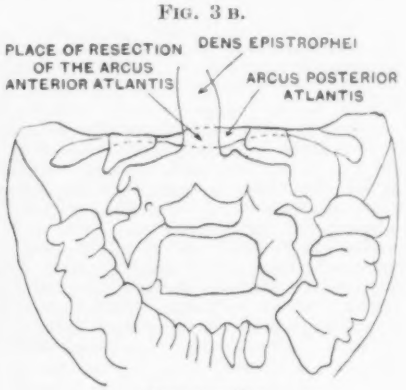
FIG. 3 A.

Commentary.

We were thus confronted with a patient who, a year previously, had experienced a fracture in the cervical region of the vertebral column, presumably in that very part of the region that had been determined by us. He had long been under treatment, not been completely cured, experienced an acute relapse of his original injury, and then entered the surgical department of the Mechnikov Hospital. It is to be noted that patients suffering from subluxation of the atlas survive this injury and sometimes seem all but restored to health, when some awkward movement of the head occasions sudden death, due to a further slipping forward of the atlas. Such is the evidence of literature. The patient in question had also obtained relief under a long period of treatment, resumed his work, during which he had a relapse, which luckily for him had not ended in death.

The complex of symptoms, including the evidence of the rontgenograms, was in this case perfectly clear. The patient was suffering from an anterior subluxation of the atlas with a fracture of the anterior arch. The rontgenograms, however, could give no exact information as to one point, whether the dens of the epistropheus was fractured or not. Anterior dislocations and subluxations of the atlas are more frequently than not accompanied with separation of the process from the body of the epistropheus. And in this case I was led into error. But looking back to the diagnosis of the patient as determined before the operation and examining now the symptoms of the patient, I find certain features that should have led to the conclusion that the dens had remained intact,

FIG. 3 B.



After operation.

the patient could turn his head and consequently execute movements involving the normal position of the dens. Had the dentoid process been fractured the movements of the head could be effected but with very great difficulty. And then, the cases collected in 1913 by Prof. Pokotilo and in 1918 by Prof. Schenk testify to the fact that patients with anterior

subluxation of the atlas are not infrequently so helpless in regard to their head that they are obliged to hold it in their hands. Possibly this may be one of the symptoms of the fracture of the dens, inasmuch as the head is poised on that process as on a vertically set axis.

However that may be in the case under discussion I assumed the occurrence of both fracture of the anterior arch accompanied by an anterior subluxation of the atlas and fracture of the dens. As the condition of the patient failed to improve in spite of an application of a plaster bandage or treatment by extension, and he was suffering for a whole year, while his case latterly became worse, and as I knew no way of helping him by conservative methods, I thought I would endeavour to relieve him by means of an operation.

Plan of the Operation.

The atlas is displaced forwards, the ligamentum cruciatum being strained. A further slight anterior slip of the atlas not only could but would lead to a rupture of the ligamentum cruciatum, compression of the medulla, and death of patient. Hence the crux of the intended operation would consist in taking measures to avert the possibility of an ensuing compression of the medulla. It thus becomes evident that to gain that purpose the anterior arch of the atlas should be removed. This measure alone would permit the detached dens to move forward with the subsequent slipping forward of the atlas. It seemed to me theoretically desirable to resect the dens simultaneously with the resection of the anterior arch of the atlas. In such case the danger involved in the compression of the medulla would be averted. The stability of the head after such an operation might be impaired, but if it was a new dens would be substituted by means of another operative intervention. This new process would have to be placed posteriorly and so devised that while losing its rotatory movements the head would obtain stability; for that purpose it would be necessary to imitate the operation of Albee and to set the superior extremity of the osseous graft against the occipital bone, under the spina occipitalis, and to join its lower end with a most convenient space provided by the bifurcation of the spinous processes of the cervical vertebræ, commencing with the second and concluding with, say, the fourth, fifth, or sixth. Anyhow, the painfulness of the bony projection of the anterior arch of the atlas protruding into the pharynx clearly testified to the necessity of its removal.

In order to accomplish the excision of the anterior arch of the atlas it is, of course, possible to manipulate through the oral cavity. But no surgeon desirous of performing an aseptic operation would willingly choose such a method. There is another way of reaching the seat of operation. Whoever has "aseptically" opened chronic retropharyngeal abscesses in children knows that the easiest and safest way to reach the affected region is to make an incision between the sterno-cleido-mastoideus in front and the trapezius at the back. Reflecting forward the sterno-cleido-mastoideus with the entire vasculo-nervous fasciculum, the retropharyngeal space is rapidly reached without encountering any large vessel or important nerve and the abscess evacuated. This was the way I intended to follow in performing an anterior laminectomy of the first cervical vertebra.

It must not be forgotten that behind the dens lies the cruciate ligament, overstrained in cases of subluxation. If this ligament gets ruptured as a result of an awkward movement of the head, which may always occur in spite of the greatest care on the part of the patient, so much the easier can such a contingency arise under anæsthesia, when all the reflexes of the patient are depressed, and when in the process of vomiting, for instance, violent movements of the head may ensue. Therefore I was obliged to warn the patient of the danger. To avert it as far as possible a plaster bed was prepared embracing one side of the head of the patient, the shoulder girdle, and the shoulder itself with the body as far as the margin of the ribs; the head and neck of the patient throughout the operation would be completely immobilised by means of this bed in which the side of the patient opposite to that operated upon is fixed. As I intended to make an incision behind the left sterno-cleido-mastoideus, the plaster bed was to embrace the right half of the head, neck, and body. The bed was prepared by the surgeon of the ward, Dr. Matusov.

The Operation Performed.

On Oct. 25th, 1926, I performed the operation under chloroform and ether.

The patient in his plaster bed was laid on the right side. The incision was made along the posterior margin of the left sterno-cleido-mastoideus. As a long incision for the sake of facilitating manipulations in the depth of the wound had to be applied, I had to sacrifice the accessory nerve of Willis. Having dilated the muscles by means of blunt hooks, I succeeded in penetrating easily between them into the retropharyngeal space. A long spatular speculum, with which the anterior part of the wound was reflected, was then introduced. Palpation of the arch of the atlas as it projected forward was easily obtained. I then commenced to manipulate with the chisel in order to chip off the arch. Here I met with a serious difficulty. Every time I set the edge of the chisel with my left hand against the apex of the arch of the atlas, protected as it was by the anterior ligament (I had no suitable raspatory for a wound of such a depth) and with my right administered blows on the handle of the chisel with a hammer, the edge of the chisel would slant off the slippery surface of the ligament. I could obtain no useful advantage from the chisel and even risked perforating the separated mucous membrane of the pharynx.

It should be noted that the wound was relatively deep. To see anything in the depths of the wound was impossible. I had to work in the dark and to trust to the sense of touch. To set the edge of the chisel perpendicularly to the surface which was to be chipped off, the handle of the chisel had to be inclined anteriorly and towards the middle line, the chiselling plane lying somewhat to the front of the line of incision of the integuments. In turning the handle of the chisel towards the middle line and anteriorly I pressed the instrument against the posterior margin of the sterno-cleido-mastoideus, whose resistance caused the handle of the chisel to turn back again. That was one of the reasons why the chisel slipped off the surface operated upon after every blow of the hammer.

To recede from this position and succeed in the intended operation I followed the advice of the assisting surgeon, Dr. Nazarov, and acted in the following manner:—

The index-finger of my left hand was introduced into the retropharyngeal space. The dorsal surface of the finger protected and reflected the mucous membrane of the pharynx, while the palmar surface pressed the extremity of the edge of the chisel to the surface operated upon. With the right hand I kept the handle of the chisel in the requisite direction, while my assistant, Dr. Nazarov, administered blows to the top of the handle. In this way we very slowly approached the realisation of our object, and at last the anterior arch of the atlas with its anterior ligament was chipped off. This part of the operation took about one hour.

I could now easily palpate the anterior surface of the dens which was enveloped in adhesions. I refused to try to move it, and could not determine whether it was fractured at the base or not.

The wound was sutured, a small tampon saturated with iodoform being introduced into the retropharyngeal space. To reach the retropharyngeal space is not at all difficult. But to chip off the anterior arch of the atlas was an exceedingly laborious process, which was caused, in my opinion, by the lack of a suitable instrument. The retropharyngeal space after the anterior separation of the mucous membrane is a few centimetres long, and if operated upon should really be illuminated. It would seem necessary for that purpose to provide the extremity of a specially designed long and curved dilator with an electric lamp protected by thick glass to ensure it from being accidentally broken while the chisel is being used. I had to act trusting exclusively to my sense of touch. For separating the anterior ligament and periosteum from the arch it would further be desirable to possess a suitable raspatory with a certain definite curve and attached to a long handle. These instruments might, of course, be unsuitable; in order to prevent subsequent growth of callus at the site of operation it would possibly be wiser to have recourse to a chisel. But the chisel should in any case be of suitable shape, long and with a sharp and narrow edge, set on a handle somewhat curved back. In that case collision with the posterior margin of the sterno-cleido-mastoideus would be averted, and the handle would not interfere with the examination of the wound and the visibility of the direction of the edge. The entire operation would then proceed under the control of the eye, and from being cumbersome and difficult, would become elegant and easily and rapidly accomplished.

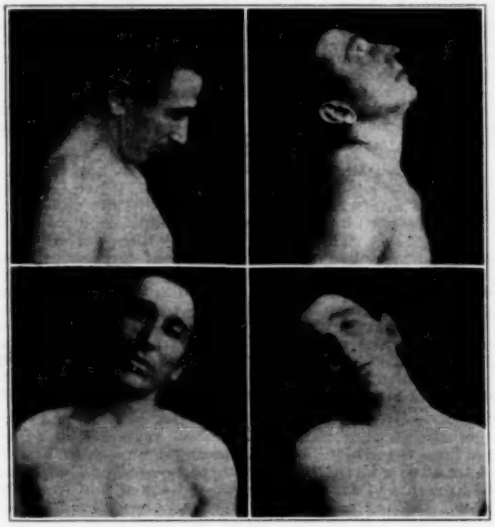
For many reasons over which I have no control I have no hope of being able to devise an armamentarium for the excision of the anterior arch of the atlas.

Since, however, the operation described will probably be found of use, I have no doubt that some surgeon will devise the requisite armamentarium, and by so doing will afford me great satisfaction.

Results of Operation.

The patient was removed to his ward in his plaster bed in which he remained for ten days. However on the sixth day, while still in his plaster bed, he could already move his head slightly. During the first three days he experienced pain deep to the pharynx, which interfered with deglutition. On the third day after operation the tampon was removed. The wound discharged a small quantity of bloody

FIG. 4.



Photographs showing range of movement after operation.

liquid. The plaster bed was removed on the tenth day. On Nov. 11th it was recorded that the patient moved his head from side to side freely without pain, but the power of inclining the head was limited.

In Fig. 2, an X ray taken after the operation, the fractured and projecting part of the anterior arch of the atlas is absent, having been removed by operation. The anterior longitudinal ligament of the vertebral column, interrupted at the seat of operation, can likewise be seen in the same radiogram. Another detail, which could not be observed in the plate taken before the operation, can now be seen; a piece of bone has become detached from the lower part of the centrum of the second vertebra and has sunk down. Thus besides the subluxation of the altas and the fracture of its anterior arch, a partial fracture of the centrum of the epistropheus had occurred. In the plate taken before the operation this detached piece of bone could not be observed, as the whole picture was indistinct. Fig. 3 is a radiogram taken through the mouth after the operation. It exhibits clearly: (1) lack of bone in the anterior arch of the atlas due to the portion resected at the operation; (2) a projection of the dens, much more sharply defined than the normal since the view of it is not obstructed by the anterior arch of the atlas. No line of fracture at the base of the dens can be seen, the process being intact. It was thus fortunate that during the operation I did not interfere with the process, though I believed then that it might be fractured and might have to be extracted later by means of a dentist's bayonet-curved forceps. The integrity of the dens had evidently enabled the patient to execute lateral movements of the head before the operation.

Photographs taken six weeks after operation show that all the movements of the head of the patient have been restored (Fig. 4); he could move his head painlessly in all directions, whereas before the operation the head could be moved from side to side only with pain and in a jerky manner.

I think that the results of the operation are worthy of attention; and if the question is put, "Can anterior subluxation of the atlas be treated by operation?" I can give it but one answer: such an operation is not only achievable, but desirable and necessary, as it restores to the patient full control of his head, without producing any harmful result. In cases of fracture of the dens, it may or it may not be desirable to have it removed. I am unable to come to a definite decision on that point. But that subluxation of the atlas with fracture of the anterior arch and integrity of the dens should be submitted to operative treatment seems to be clearly demonstrated by the observations herein contained. Thus it appears that in this category of injuries, rare certainly but serious, results can be obtained by operation which are not achievable by more conservative methods. I must remind readers that the operation was performed one year after the injury, at the end of which a sharp aggravation in the state of the patient had occurred.

PHLEBITIS AND THROMBOPHLEBITIS

OF THE LOWER EXTREMITIES AND OF THE SUPERFICIAL VEINS OF THE LOWER ABDOMEN.*

BY WILLIAM BAIN, M.D. DURH., F.R.C.P. LOND., F.R.C.S. EDIN.

IT is rather remarkable that in most of the text-books on medicine which I have seen phlebitis is either not mentioned or dismissed in a few sentences. Seeing that it is fairly common in gouty patients, and as a complication or sequela of infectious diseases, this is somewhat surprising.

It has been a subject of controversy whether phlebitis occurs with or without the formation of a thrombus, or whether thrombosis always precedes phlebitis. Hunter and his disciples stated that inflammation of the vein preceded the thrombosis, but Virchow in 1856 declared that thrombosis was the primary and essential condition, and that phlebitis was secondary. There is probably a certain amount of truth in both these assertions. Phlebitis with thrombus formation is certainly the more common form.

Varieties of Phlebitis.

The varieties of phlebitis or phlebitis cum thrombus are: (1) Phlebitis migrans.[1] Briggs[2] describes cases which he calls recurrent phlebitis of obscure origin. His description of these cases bears a strong resemblance to the phlebitis observed in gout. (2) Syphilitic phlebitis which chiefly affects the adventitia of the vein. (3) Phlebitis occurring in connexion with a septic wound. Two and three will be excluded from further consideration. (4) Thrombophlebitis as a complication or sequela of infectious diseases, such as enteric fever or influenza. (5) Intramuscular thrombophlebitis. This variety is not mentioned in either Allbutt's or Osler's Systems of Medicine. Certain specialists profess to believe that both phlebitis and thrombosis are due to micro-organisms or their toxins. I will endeavour to answer these questions by the citation of appropriate cases.

Ætiology.

Predisposing Causes.—Thrombosis is supposed to be due to one or more causes, viz.:—

(1) Damage to the lining cells of the vein.

* Read before a meeting of the Harrogate Medical Society.

[1] Schwarz, Gottfried: Phlebitis Migrans, Virch. Arch. f. Path. Anat., 1905, clxxxii., 178.

[2] Briggs, J. B.: Bulletin Johns Hopkins Hospital, 1905, xvi., 228.

(2) Retardation of the blood stream and changes in the blood increasing its coagulability. When the endothelium is well nourished and there are no micro-organisms present thrombosis is unlikely to occur. Barcroft has shown the fundamental importance of oxygen for the life of the tissues.

(3) *Chlorosis.*—Thrombi occurring in chlorotic subjects are probably due to changes in the blood. The endothelium of the veins must be imperfectly nourished when there is a marked diminution of the hæmoglobin in the circulating blood.

(4) *Gout.*—Sir James Paget stated that in gout phlebitis "affects the superficial rather than the deep veins and often occurs in patches, affecting (for example) on one day a short piece of the saphenous vein, and on the next day another separate piece of the same, or a corresponding piece of the opposite vein. It shows herein an evident disposition towards being metatastic and symmetrical; characters which, I may remark, are strongly in favour of the belief that the essential and primary disease is not a coagulation of the blood, but an inflammation of the venous walls." Sir William Roberts suggested that the presence of scattered crystals of sodium binurate in the blood may constitute foci around which thrombi may be formed: a far-fetched theory. Another writer suggests that gouty phlebitis is due to an intoxication arising from the alimentary canal. Coates and Raiment estimated that the calcium in normal human blood was about 10 mg. per cent. In the blood of gouty subjects it varied from 16 mg. per cent. to 24 mg. per cent. It must be obvious that this great increase in the blood calcium would render gouty subjects liable to attacks of thrombophlebitis.

(5) Parturition, especially after severe hæmorrhage.

(6) Infectious diseases, such as enteric fever and pneumonia. A peculiar feature is that in thrombosis complicating an infectious disease the specific micro-organism of that affection has never been discovered in the clot. An American writer expressed the opinion that tobacco predisposes to phlebitis.

Apart from toxins the most common exciting cause in my experience is a chill—more especially if this is immediately preceded by either mental or physical fatigue. There are all grades of severity, from a simple phlebitis up to a complete blocking of the femoral vein. The greater frequency of venous thrombosis in the left leg is attributable to the greater length and obliquity of the left common iliac vein and its passage beneath the right common iliac artery. It has been suggested that the pressure of a distended sigmoid flexure or rectum may contribute to slowing of the blood stream on the left side.

Symptoms.

The initial signs of phlebitis and thrombophlebitis are as a rule identical when a superficial vein is affected. A small patch of cellulitis over a vein can be seen, somewhat reddish, or purplish-red in tinge; and on gentle palpation a slight brawny thickening can be felt. The history of the attacks is, however, different. In simple phlebitis the patient is generally unaware that there is anything the matter until he gets out of bed. On walking he feels pain in the affected part. In thrombophlebitis the patient awakes during the night with pain in some part of the leg, and if he has had a previous attack he can, with some assurance, suspect the probable diagnosis. In simple phlebitis, when the cellulitis subsides, the vein will be found permeable, so that the patient may get up in five or six days. It is a wise rule to keep him in bed for at least a week in case of a recurrence in the same or another vein. With thrombophlebitis, after two or three days there will be felt one or more clots which will either become absorbed or organised so that the vein becomes permanently occluded. When a superficial vein is thrombosed the pulse and temperature are unaffected, unless the clot is extensive or septic. The long saphenous vein has from 10 to 20 valves; more in the leg than the thigh. A clot generally extends up to the next valve, but if the patient goes about it may extend further. It has been stated that inflammation of the left saphenous is more painful than the right on account of the close proximity of the left saphenous nerve to the vein. I have seen five cases of simple phlebitis occurring in gouty or rheumatic subjects where no septic focus could be detected. My case-book shows a larger number of cases of thrombosis, in some of them without any detectable sign of infection. Instead of referring to the symptoms of the more severe forms of thrombophlebitis the better plan will be to describe cases illustrating special points in the different degrees of severity.

Clinical Records.

CASE 1.—A patient sat in a cold room until his feet were icy cold. He awoke about 4 A.M. with pain in the left leg. Ten grains of aspirin relieved the pain. When I saw him there was a clot about the size of a small marble in the lower part of the left calf about 4½ inches above the ankle. On movement the pain was rather severe owing to the vein dipping beneath the fascia. When the affected vein is on the inner side of the leg below the knee the pain, if any, is negligible unless the part is palpated rather too firmly. Generally the patient is quite comfortable unless he exerts himself. The clot completely disappeared in five weeks.

CASE 2.—Last March a patient had an attack of thrombophlebitis of the right circumflex iliac vein. When I saw him some weeks afterwards there were four distinct clots to be felt. On palpation they gave the impression of small indurated glands. They have practically disappeared now—only a slight thickening remains. About four months ago he had a patch of cellulitis over the right superficial epigastric vein. It was about the size of a five-shilling piece. On gentle palpation nothing could be detected except a slight thickening of the subcutaneous tissues. Two days later there were three clots present in the vein. They have not quite subsided yet. Six weeks later he had a boil on his hand which was excised. A culture showed the presence of the *Staphylococcus aureus.* Examination of the blood was negative.

CASE 3.—A patient about 55. A gouty subject, had fibrositis of the lumbar and right gluteal regions and of the fascia lata for which he was having dry massage. The masseur after a fortnight's treatment noticed one day that he had œdema of the right ankle, and asked him to see me at once. He had no pain on exertion, and apart from the œdema there was no swelling of the cutaneous tissues. I examined the calf of the leg carefully but failed to detect any tenderness. On palpating the front of the leg he thought it was a trifle more sensitive over the anterior tibial artery compared with the other leg. Three days before the appearance of the œdema he put on riding-breeches which were too tight and rode a bicycle for 40 miles. The œdema disappeared in three weeks' time after complete rest. His teeth had been extracted, and his nasopharynx appeared normal.

Regarding œdema, the obvious explanation is that it is due to venous obstruction; to a filtration of the blood serum in consequence of the increase of intravenous and intracapillary pressure as a result of the blocking of a medium or large-sized vein. This explanation is not quite so satisfactory as at first sight it appears. The problem is a complex one, and there are certain undetermined factors at work which are interwoven with the processes of lymph formation and lymph absorption.

CASE 4.—A gouty patient caught a chill one evening. While he was having a bath next morning he noticed the left calf was larger than the right. This was confirmed by measurement. On examining the leg he could not detect any tender spot. There was no pain or discomfort in the leg. He lay on a couch all day with the leg elevated, and at bedtime put his knee on a chair and slid it along to the bedside. Next morning the left leg was nearly double the size of the other. The doctor told him his femoral vein was blocked. During the four months he lay in bed he never had any pain in that limb; merely an intermittent sensation of tenseness over the shin.

An interesting question in connexion with this case is, can there be phlebitis of a large vein without pain, or, alternatively, can thrombosis occur without the supervention of phlebitis? The vein remained blocked for 12 months when the œdema disappeared and the leg became perfectly normal in size. It is one of the miracles of pathology how a vein obstructed for over a year can again become permeable.

About six weeks after this attack, the patient was reading in bed one night and did not notice that the window was wide open until the right foot felt very cold; the affected leg was encased in cotton-wool from the foot upwards. A hot water-bottle was applied immediately to the foot. He awoke about 3 A.M. with severe pain in the right calf. Fifteen grains of aspirin taken two hours later gave complete relief, and the pain did not recur. That day the doctor stated there was œdema of the ankle, and over the lower end of the tibia, but there was very little swelling of the leg—less than an inch. Previously the leg had been measured to compare it with the left. If pressure was applied to any part of the leg there was marked tenderness, otherwise there was no discomfort except whem the leg was moved. The condition was diagnosed as intramuscular thrombophlebitis, this opinion being subsequently corroborated by a London specialist. The œdema did not disappear for eight months. It should be mentioned that the patient's pulse and temperature remained normal throughout his illness, and that no septic focus was detected. This happened 10 years ago and both limbs have been normal in size ever since.

Years ago I saw a number of cases of phlegmasia alba dolens after parturition, influenza, and enteric fever. Some of the patients had permanent enlargement of the leg, especially after exercise, due to œdema.

Treatment.

When the temperature is 102° F. or over it is advisable for a surgeon and physician to meet and discuss the treatment to be adopted. If the temperature is over 101° and there are recurring rigors, the case should be seen by a surgeon also. I shall only deal with those cases where the temperature is either normal or not over 101°.

On examining a patch of cellulitis over a superficial vein, only the gentlest palpation is permissible on account of the danger, if a thrombus be present, that a portion of it may be detached; in fact, it is safer not to touch the affected part for the first three days. The diagnosis cannot present any difficulty. The chief essential is rest in the semi-recumbent posture when a superficial vein is affected, and in the recumbent position if a larger vein is involved. I should like to stress the point that absolute rest is the important factor in treatment.

The foot of the bed should be raised, and the so-called cradle used to protect the limb from the weight of the bedclothes. A pad should be placed under the heel. A hot fomentation of boric lint covered with yellow oil silk and lightly bandaged should be applied to the cellulitic patch. If there is pain, lead and opium solution, or preferably glycerine of belladonna, may be used. If a deep vein be affected, other preparations have been recommended, such as, ouataplasme and antiphlogistine. Shortly after the onset the whole limb should be wrapped in cotton-wool, or gamgee tissue, and kept in position by a many tailed flannel bandage. This device can be changed every night, or twice daily. If pain still persists, a cachet of magisal 7 gr., pyramidon, 6 gr., and caffeine citrate, 3 gr., may be given every four hours. If four cachets do not give relief, a hypodermic injection of morphine should be used, but I have not seen a case requiring morphine. The patient should be warned against sudden movements in bed. It is the merest commonplace to say that particular attention should be paid to the alimentary tract both as regards a satisfactory evacuation of the bowels daily, and strict attention to dietetic restrictions, the chief desideratum being a reduction in the intake.

In thrombosis of a superficial vein the patient may get up to the commode placed alongside the bed, but if the femoral vein is affected, he must submit to the use of the bed pan. I do not think there is any risk when a superficial vein is affected in using the commode, as the patient can slide on to the night-stool without jerking the affected leg, or putting his weight upon it. The patient may be sponged daily with eau-de-Cologne; the back and gluteal regions should be thus treated four or five times each day to prevent bed-sores. An intensely disagreeable symptom, becoming prominent after the sixth week, is an indescribable ache in the lumbar region. It is more exasperating than a pain, because the latter one can relieve whereas the former resists more or less any remedial measures. Air cushions are in most cases useless. I have tried a large cotton-wool pad with the centre cut out, but it made the patient uncomfortably hot. In future I shall use a liniment consisting of menthol ℥ii, lin. belladonna ℥iii, to lin. chloroformi ℥ ii. It is the most likely application to give temporary relief. When the femoral vein is thrombosed gentle effleurage from below upwards may be prescribed two or three months after the onset, but it is quite unnecessary in thrombosis of a superficial vein.

The question, "When may I get up?" is frequently asked. It is wise to err on the safe side, and say from four to six weeks, if a superficial vein is thrombosed, but as regards a large vein the answer depends upon the severity of the attack, and the condition of the patient. Even when the pulse and temperature are normal, and the patient feels quite well, it may be necessary to keep him in bed from three to four months if the femoral is completely thrombosed, as there is a considerable strain upon the superficial veins.

Regarding drugs. Almroth Wright recommended citrate of sodium in milk; later on he substituted citric acid 20 gr. in water twice daily, which is quite a pleasant drink, and so far as I know cannot do any harm. If a septic cause is suspected, collosal manganese orally has been recommended. Apart from any therapeutic influence, the administration of a drug may have a psychological effect upon the patient, and in treating disease every little thing may be helpful; it is extremely difficult to assess the value of any subsidiary remedy.

If a patient has had more than one attack of phlebitis, he ought, if possible, to undergo the treatment at Bagnoles de L'Orne. From the evidence the waters and baths of this place seem to possess peculiar properties in the prevention of phlebitis.

Clinical and Laboratory Notes.

A CASE OF RAT-BITE FEVER.

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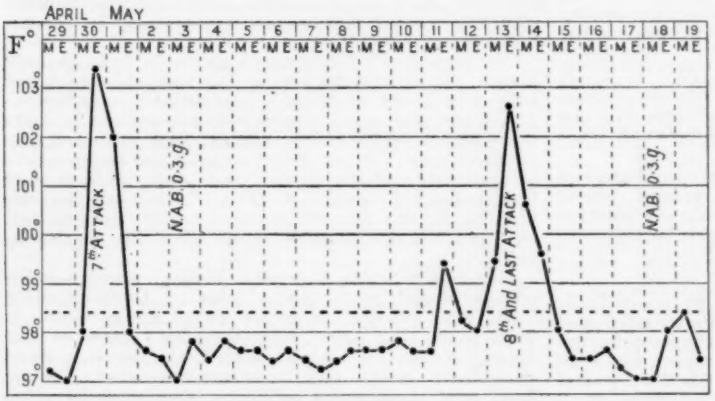
THE following notes of a case of rate-bite fever are thought worthy of record, not only on account of the comparative rarity of the condition in this country, but also because certain signs usually regarded as typical were absent.

J. K., aged 25, a farmer, was first seen on March 14th, 1925, on account of headache, nausea, severe limb pains, and weakness of remarkably sudden onset. His previous medical history was uneventful apart from a very mild attack of malaria during the war, from which he had completely recovered.

On examination the temperature was 102° F. and the pulse-rate 120; the pulse was small and of poor volume. The blood pressure was 100/80. He was sweating profusely, and a faint blotchy erythematous rash was noticed on the trunk and limbs. The liver and spleen were not enlarged and the abdomen was soft and painless to pressure. The lungs were normal and the urine was free from albumin and sugar. A small bilious vomit contained no free hydrochloric acid. The clinical picture was that of extreme prostration such as is seen in influenza, a diagnosis which was rendered more probable by the occurrence of several other cases in the locality. After 24 hours the temperature and pulse were normal and the patient appeared himself again.

Eight days later these phenomena were exactly repeated, and on this occasion, in response to a leading question, he admitted having had a rather severe rat bite about two months previously. The bite had healed rapidly, and he

had not connected the inciden with his subsequent illness. A soundly healed painless scar was visible on the left hand; no enlargement of lymphatic glands was noted either on this or subsequent occasions. A blood-count gave the following result: red cells, 4,560,000 per c.mm.; hæmoglobin, 85 per cent.; leucocytes, 16,000 per c.mm., of which 89 per cent. were neutrophil polymorphs. In films stained by Leishman's and Giemsa's stains no parasites were seen, the only abnormality being the presence of many red cells showing punctate basophilia. A broth culture was negative.


APRIL MAY
F°
29 30 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
ME ME ME ME ME ME ME ME ME ME ME ME ME ME ME ME ME ME ME ME ME
103°
102°
101°
100°
99°
98°
97°
7th ATTACK
N.A.B. 0·3 g.
8th And LAST ATTACK
N.A.B. 0·3 g.

Temperature chart in a case of rat-bite fever.

Unfortunately, no other method for identifying the *Spirillum morsus muris* was carried out.

The patient continued to have febrile attacks every eighth day until on May 3rd, two days after his seventh, he was admitted to the Evesham Hospital and given novarsenobenzol 0·3 g. intravenously. Following a slightly longer interval, nine days instead of seven, he had his eighth attack and a further injection of N.A.B., 0·3 g. was given, since when he has been perfectly well.

In view of the history, the long incubation period, the clinical phenomena, and the rapid response to treatment by N.A.B. it can scarcely be doubted that this was a case of rat-bite fever, and we wish to draw special attention to the fact that at no time were there signs of recurrent inflammation in the wound, which remained healed and painless throughout, nor enlargement of the lymphatic glands. Judging from the published accounts (1, 2, 3, 4, and 5) this is quite exceptional, if not unique, and adds to the difficulties of diagnosis where a prolonged incubation period and absence of all local symptoms combine to conceal the original infection.

References.—1. Horder, T. J.: Quart. Jour. Med., 1910, iii., 121. 2. Low, G. C.: Brit. Med. Jour., 1924, i. 3. Collier, W. T.: Ibid., 1924, ii., 265. 4. Douglas, S. R., and others: THE LANCET, 1918, i., 253. 5. Herzfeld and Mackie, T. J.: Edin. Med. Jour., October, 1926.

UNUSUAL MISDIAGNOSIS IN A CASE OF ACUTE INTESTINAL OBSTRUCTION.

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THE following case is of interest as an example of an unusual error in diagnosis.

A man, aged 65, was admitted to King's College Hospital on August 18th, 1926, with acute intestinal obstruction. The acute symptoms were relieved on admission by an asafœtida enema. The patient gave a history of a dull pain in the hypogastrium for three weeks. He had also been getting constipated, the motions becoming smaller in quantity and very hard, though of normal shape and colour. There had been no diarrhœa, and no blood or mucus in the stools. Defæzation had become increasingly difficult with much tenesmus. Micturition was normal, except that the quantity of urine had diminished slightly three days after the onset of constipation.

Condition on Examination.—Pulse-rate 84; temperature, 98·4° F. Abdomen distended and prominent, movements normal, no rigidity, no tenderness. Hypogastrium dull to percussion, with shifting dullness in both flanks. Liver, spleen, and kidneys not palpable. On rectal examination a hard nodular mass about the size of a large egg was felt in the anterior wall of the rectum, 2 in. above the external sphincter. It was not movable, and the surface felt as if it was ulcerated, but no bleeding occurred on examination. A diagnosis of carcinoma of the rectum was made and as obstructive symptoms increased, a colostomy was performed by Mr. Cecil P. G. Wakeley on August 20th.

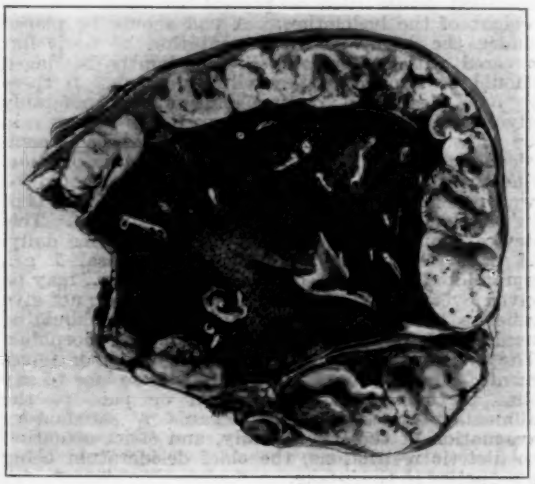
Operation.—A paramedian incision 3 in. long was made through the left rectus muscle, and the peritoneum was opened. A condition of diffuse carcinomatosis was found with small nodules over the small gut and colon, and also in the mesentery. About three pints of dark-brown ascitic fluid was drawn off, and a colostomy performed. The gut was opened, a Paul's tube was tied in, and the wound was sutured and packed round with iodoform gauze and a powder of boric and salicylic acids to prevent ascitic oozing.

Progress.—On the day after operation the patient vomited 30 oz. of foul coffee-grounds vomit. There was slight action of the colostomy, but although purgatives were given freely an action of the colostomy became increasingly difficult. The liver and spleen became palpable on Oct. 4th, and the patient died on Oct. 23rd.

Autopsy.—Body was greatly emaciated; both lungs showed collapse and broncho-pneumonia at the bases. Heart muscle showed brown atrophy.

The peritoneal cavity was almost completely obliterated by adhesions and carcinomatous growth, and there were numerous small nodules on the abdominal wall and over the surface of the gut. A huge mass of carcinoma was found beneath the left lobe of the liver, slightly adherent to it and to the stomach, but not invading the stomach wall. Beneath the right lobe there was a large abscess containing foul, greenish pus. On examining the mass felt per rectum, it was found to be a secondary deposit situated between the rectum and bladder. As it was obviously not the primary growth, the viscera were removed in toto with part of the posterior abdominal wall; they were hardened in 10 per cent. formalin, and a detailed dissection was subsequently made.

FIG. 1.

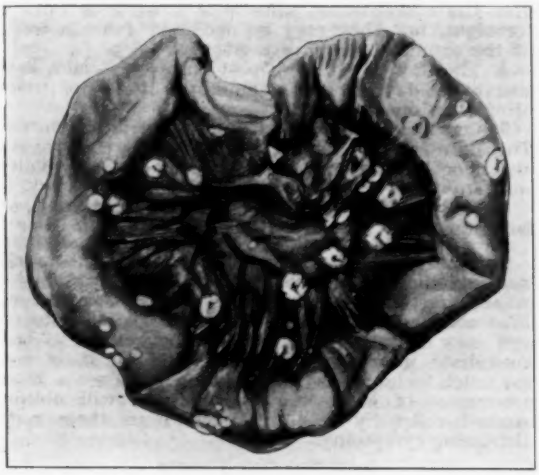


Section through liver showing the growth surrounding the periphery of the organ in the form of a capsule, while leaving normal liver tissue, free from any secondary deposits, in the centre.

The dissection showed a large, soft, fungating mass of carcinoma of the typical cauliflower variety filling the cæcum and occluding the ileocæcal valve. The large mass of growth, already referred to as lying

below the left lobe of the liver, was found to be a huge secondary deposit in the preaortic glands. Spreading out from it were numerous nodules in the mesentery which were almost confluent at its base, but became more sparsely scattered as the free margin was approached. The splenic hilum was invaded by growth spreading from the region of the cœliac group of preaortic glands; and the periphery of the liver was invaded by a mass of growth which completely encapsuled the organ, the enclosed liver tissue being perfectly normal (Fig. 1). The duodenum and stomach were normal, although part of the greater curvature

FIG. 2.



Coil of small intestine, showing secondary deposits in the mesentery, which become more sparsely scattered as the border of the gut is approached; also the superficial deposits in the peritoneum covering the surface of the gut.

was adherent to the spleen and to the mass of growth springing from the preaortic glands. The pancreas, kidneys, and prostate were normal.

Microscopic examination of the primary growth in the cæcum showed a typical adenocarcinoma with very well-marked colloid degeneration. The secondary deposits in the peritoneum over the small gut and colon, and invading the periphery of the liver, were of similar structure, as was also the mass lying between the rectum and bladder. This deposit of growth had penetrated the muscular coats of the rectum and invaded the mucosa, being just about to ulcerate into the lumen of the rectum.

Discussion.

This case offers an interesting example of misdiagnosis, the error being chiefly due to the unusual position of part of the secondary deposit—namely, between the rectum and bladder. In the light of the above findings, it appears that doubts might have been raised as to the correctness of the diagnosis by the continuation of some degree of obstruction after colostomy and also by the evidence of extensive secondary deposits, although the primary seat of growth in the rectum had not yet ulcerated through into the lumen of the bowel. On the other hand, in carcinoma of the cæcum, secondary deposits are usually late in appearance, and, moreover, relief of obstruction occurring at the ileocæcal valve would not be expected to follow the operation of colostomy.

There seems little doubt that in this case the original attack of acute obstruction, relieved by colostomy, was due to the combined action of the growth obstructing the ileocæcal valve, and the secondary mass narrowing the lumen of the recrum below. The failure of the colostomy to act freely and the subsequent increasing obstruction were due to the primary seat of growth obliterating the ileocæcal valve more and more completely until finally almost complete obstruction again resulted. Another unusual feature is the fact that there was a comparatively early and typical primary growth in the cæcum, with very extensive secondary deposits all over the peritoneal cavity.

The case presents rather a striking example of the spread of the carcinoma by at least two well-defined and separate paths—viz., peritoneal and lymphatic spread. The peritoneal spread is shown by the presence of small nodules in the peritoneum of both the anterior and posterior abdominal walls, while the secondary nodules situated on the surface of the small gut were also seen in the peritoneum and even microscopic examination showed that only the outer portion of the muscular coats of the gut had been invaded, the mucosa being quite intact. A peritoneal spread, moreover, offers the only satisfactory explanation of the rare phenomenon of a complete carcinomatous capsule surrounding the liver and infiltrating its periphery for about an inch, while the central portion was left completely normal with no trace of any secondary deposit in its substance. The mass lying in the rectovesical pouch which lead to the error in diagnosis was due either to direct peritoneal spread or to a small mass of carcinoma cells becoming detached into the peritoneal cavity and then falling into the rectovesical pouch, there undergoing development. The lymphatic spread is shown by enlargement of the ileocolic groups of glands, which could be traced upwards until the huge secondary mass lying in the superior mesenteric group of preaortic glands was reached. Further lymphatic spread from this point along the superior mesenteric afferent lymphatics was shown by the nodules of growth becoming more sparsely scattered through the mesentery as its periphery was approached (Fig. 2); while at its base they formed a large confluent mass of carcinoma as already described. The deposit at the splenic hilum was due to the permeation of growth from the superior mesenteric group to the cœliac group of preaortic glands and thence along the afferent vessels to the splenic hilum.

It must also be mentioned that two small secondary deposits of growth were found *in* the sternum, opposite the seventh left and third right ribs respectively. This would appear to indicate some dissemination of the growth by the blood stream, although no further evidence of such a path of spread could be found. It is, moreover, rare to find secondary carcinomatous deposits in bone where the primary seat of growth is the cæcum.

I wish to express my thanks to Mr. Cecil P. G. Wakeley for permission to examine and record this case.

A NOTE ON THE RELIEF OF MIGRAINE BY THE ADMINISTRATION OF CONCENTRATED SALTS.

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THE treatment of migraine has taken many forms, both before and since E. Liveing published his celebrated monograph. The old idea that it was hepatic in origin has gradually given way to the modern theory of fatigue, eye-strain, or some endocrine defect. It would appear that a combination of the old and modern theories is the correct view, and that migraine, at any rate in a percentage of cases, is caused by a hepatic toxin, which in predisposed subjects may be produced by nervous over-action or inhibition. Explanation of the action of this toxin is undoubtedly difficult, but migraine occurs chiefly in people with a highly sensitive nervous system, and it should be remembered that toxins, both organic and inorganic, often show a predisposition to pick out and attack certain portions of the nervous system.

The cases observed belong to Liveing's second type. They are consecutive, and none of them below failed to respond immediately to the method described. So long as treatment was continued the attacks completely disappeared or only showed

as transient headaches without prostration or vomiting; but it was noticed that the first three cases ceased treatment after a time, to resume of their own accord when the symptoms reappeared. The shortest time which the condition had lasted in any of these cases was 15 years, and every kind of treatment had been previously tried without success, except that in two cases massive doses of sodium bicarbonate had given relief for periods up to three months. Both had subsequently failed to respond to this, and for a time the attacks became more severe.

Particular attention is called to Case 3, in which, owing to marked distaste, cholecystenterostomy was decided on, with a view to direct drainage of the gall-bladder. At operation, however, this was found to be very small, tightly tucked up under the liver and surrounded by adhesions; there were no gall-stones. This was most unfortunate, since had the operation been completed and resulted in improvement, it would have been additional evidence of hepatic origin.

Clinical Records.

CASE 1.—Female, aged 65; married, no children. An old Army nursing sister. Migraine attacks about every three weeks or a month for 40 years. Was free from attacks for three months on one occasion when she took large doses of bicarbonate. First came under treatment in 1924. No attacks as long as treatment is continued but relapses if discontinued, but the attacks are not so severe. General condition much improved. Complexion, which used to be sallow, now a much better colour.

CASE 2.—Female, aged 40; married, two children, one a girl, healthy, and one a boy, aged 10, who suffers from severe acetonæmia with occasional outbreaks of bullous urticaria papulata. She first came under treatment in 1924 and showed immediate improvement, but owing to hæmorrhoids stopped treatment, after which the attacks of vomiting and hemicranial headache returned but not so violently. Under modified treatment she has now had no attacks for 12 months. General condition and complexion much improved and is now putting on weight. Her mother and sister are similarly affected.

CASE 3.—Female, aged 45; married, two children, one (boy) suffers from acetonæmia and has had attacks of urticaria papulata. Frequent attacks of migraine since a girl, with vomiting for four or five days at a time. Highly neurotic. No attacks as long as treatment is continued. General condition improved but does not persist with treatment owing to distaste. Operation (supra).

CASE 4.—Female, aged 32; single. Frequent attacks for many years, latterly every two to three weeks. She has not long been under treatment but has had only one slight attack in the last six months and this was due to domestic worries.

CASE 5.—Female, aged 35; married, no children. Attacks of migraine since a girl and when first seen occurred fortnightly. Dr. B. St. Clair Roberts examined her eyes and reported no want of muscle balance or astigmatism. Her father has recently had a stroke and this caused some return of headaches, but they are not so prolonged nor are they now associated with vomiting. She again has only lately come under treatment but has had no real migraine attack for five months.

It is unfortunate that the effects of fatigue and worry are so easily demonstrable in migraine and this has diverted attention from the real source of trouble—the liver. Every one of these cases suggests a temporary poisoning of the nervous system and in the course of time the affected nerve cells become sensitised so that a relatively slight stimulus will originate an attack.

Bennett and Venables showed that anxiety and worry affected the secretion of gastric juices in hypnotised subjects and it is not difficult to imagine that in patients with a low liver efficiency and a sensitive nervous system, some comparable inhibition takes place, resulting probably in acetone or one of its immediate derivatives being absorbed by the blood stream. This was first noticed in the breath and in the urine in 1923, and formed the starting-point of the present investigation. About the same time Venables's modification of Lyon's concentrated salts method of emptying the gall-bladder was first published, and this forms the basis of treatment.

Treatment.

1. ℥ ii.–℥ iv. of a 50% solution of magnesium sulphate is given one hour before rising, and following this, the patient is instructed to lie semi-prone on the right side.

2. At the end of the hour a large tumblerful of hot water or hot weak tea is taken. This is most important, since if the salts are not evacuated within two or three hours, a feeling of intense depression is produced which may result in an attack.

3. Each case must be treated with regard to individual peculiarities and it is usually sufficient to give the concentrated salts once a week or once a fortnight, but they may be necessary twice a week at the commencement of treatment.

4. The day or half-day previous to the salts is a starvation day, but this should be done not more often than once a week.

5. Certain articles of diet must be strictly limited. These are fats of all sorts, and in certain cases eggs; also chocolates, cocoa, coffee, and alcohol, especially spirits.

6. Regularity of habit should be urged, and as far as possible, freedom from worry and fatigue.

So many remedies have been tried and found wanting, that there must exist a healthy disbelief in any new form of treatment for this condition. That now described has the merit of being inexpensive and easy to carry out, and having regard to the immediate improvement which resulted, it is not too much to hope that with more general use a good percentage of cases of this condition will obtain marked relief by this treatment from their very distressing symptoms.

Medical Societies.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

AT a meeting of this Society held on March 25th, Dr. WILFRID FOX (Past-President) in the chair, there was a discussion on the

PLACE OF VENEREAL DISEASE IN THE MEDICAL CURRICULUM.

Dr. J. H. SEQUEIRA said that in the combat against venereal disease—especially syphilis—the best investment was a high standard of knowledge throughout the profession. In his early days it had been everywhere the custom for the surgeon to deal with venereal diseases in their initial stages; it was in the surgical out-patient department that the student was taught the differential diagnosis of primary syphilitic lesions as they affected the genitalia, but not all surgeons paid attention to blenorrhagia and its complications. The surgeon also dealt with the secondary manifestations of syphilis and gummata when they involved accessible regions. On the whole the result was satisfactory, as most of the men who had spent six months in the out-patient surgical clinics went into practice possessing a fair knowledge of diagnosis and treatment of the early, and some of the late, manifestations of syphilis. And a share in the instruction was taken by the ophthalmic and dermatological departments. But there was no compulsion on students to attend the skin department, and most of them were insufficiently instructed in the diagnosis and treatment of venereal disease in its earlier stages. In those days the physician stood sublimely aloof from the more sordid aspects of syphilis; he only took an interest in the results of spirochætal infection when life was gravely threatened. Dr. Sequeira then recounted the events which culminated in the Royal Commission on

Venereal Disease, and said that before the Report of the Commission was issued Mr. Frank Kidd had developed the treatment of gonorrhœa on modern lines at the London Hospital Genito-urinary Clinic, and he himself had done the same for syphilis in the skin department.

An Ideal Course on Syphilis.

An ideal course on syphilis, said Dr. Sequeira, would include contributions from the bacteriologist, serologist, and pathologist, with demonstrations by the dermatologist, general physician and surgeon, neurologist, ophthalmologist, and laryngologist. Such a course was given in the early part of 1914 at London Hospital to post-graduates and senior students. It was a great success, but the war prevented its repetition. Then came the inauguration of a special service to deal with venereal diseases, the prime objective of which was to cope with the greatly increased incidence which followed war.

It would be generally agreed that the newly qualified practitioner should be able to diagnose at sight a straightforward case of primary or secondary syphilis, and to take blood for a Wassermann test, or a specimen of serum to send to a laboratory. He should have been shown diagnosis by dark-ground illumination, but Dr. Sequeira did not think that many men should be expected to give a satisfactory diagnosis by this means if they had left hospital some considerable time before. Also the practitioner should have learnt the technique of intravenous injection and the dangers and complications attending it. Everyone would admire Colonel L. W. Harrison's efforts to make of every general practitioner a venereal expert, but even what he described and the expensive apparatus he recommended did not apply to many general practices.

In cases of suspected gonorrhœa the student must learn to take the laboratory specimen, and must have some acquaintance with the technique of treatment, though it seemed advisable that care should be taken to check the wholesale irrigation which swelled the number of attendances in the clinics, and which, he was credibly informed, materially helped the birth control movement by its effects on the posterior urethra.

State-aided Clinics and the Instruction of Students.

Dr. Sequeira could see no reason why the clinics supported by the State and local authorities should not be used for the teaching of students, but admittedly difficulties were encountered in practice. The kind of difficulty he had in mind was illustrated by the following incident. The staff responsible for venereal treatment at a hospital met representatives of public bodies to discuss developments requiring money, and the medical representatives were warned, before the meeting, that the question of teaching facilities must not be introduced into the discussion, otherwise the funds would not be forthcoming. One of the gentlemen who answered Dr. Sequeira's questionnaire mentioned that, by agreement with the officials of the financing bodies, the medical officers did not give long demonstrations which would suggest to the patients that they were teaching students, and that students who were clerking in the venereal disease departments were given the title of "clinical assistant." Why, he asked, should there be this atmosphere of dissimulation? To instruct students there must be adequate opportunity—i.e., sufficient cases. It was said that the number of patients attending a clinic depended on the way that clinic was advertised. But the great medical schools should have the preference, as only in them could the greatest number of medical practitioners be taught. All should be run on equal terms. He asked whether it was proposed to teach venereal diseases at certain centres, as fevers were taught at the Metropolitan Asylums Board Hospitals. He hoped not, as the student's curriculum was already over-full, and it would be disastrous to extend it. The time usually allotted in the schools for attendance in the venereal disease clinics was three months; some schools required attendance at 12 demonstrations. Attendance was now usually compulsory before the student presented himself for his final examination, but at one school it was still optional. In most cases the student's fifth year was regarded as the most appropriate stage for this venereal disease instruction.

Conclusions.

Dr. Sequeira wished there were no special place for venereal disease teaching in the student's curriculum; there should be adequate instruction in the diagnosis and treatment of syphilis in all its stages. He held that the student was best taught about the primary stage and the cutaneous manifestations of the disease in the skin department. Adequate instruction should also be given in the diagnosis and treatment of gonorrhœa. If, for administrative purposes, nothing better could be proposed than the making of ad hoc clinics, he urged that the heads of these departments should be part-time officers having a wide outlook, and he would prefer that they should be younger members of the staff of a teaching hospital. Nothing could be worse, he thought, than the production of a class of venereal disease specialists, locked up in their own narrow sphere, whose efficiency was gauged by the increasing number of attendances, absence of complaints, and optimistic reports.

Discussion.

The CHAIRMAN said that he had always held that the success of a scheme depended largely on the man. In the early days venereal diseases were taught by the surgeons, who were very bad at it; it had been a revelation to him when he went to the St. Louis Hospital, Paris, for a course of instruction on the subject. Many of the devices at clinics were employed to induce patients to undergo treatment, and if it were thought there was anything like experimentation by students, many would be shy of coming, and would go to quacks. One difficulty was that at the hour when clinics were usually held the student had finished his day's work. But when the student attended there must be plenty of cases.

Mr. WANSEY BAYLY thought that students should be taught the importance of radiography, as sometimes syphilis left sequelæ which X rays revealed.

Sir JAMES DUNDAS-GRANT said that in a startling number of cases syphilis was found to be the causal disease; it might be overlooked, for instance, owing to the respectability of the patient. A tendency to give a hopeful prognosis in syphilis often had untoward results.

Colonel L. W. HARRISON said that he gathered that Dr. Sequeira would have no special place in the curriculum for the teaching of venereal diseases, but that the student should be taught about them in all departments of the teaching school. That had been the custom in the past, and the result had been that one great cause of the spread of these diseases was lack of knowledge by doctors passing out of the medical schools. This was bound to be the result of teaching the subject in fragments. It was now too large to be divided up; it should be grouped into one department. The knowledge of the average man to-day was greater than formerly, and this was because the subject was taught where cases of venereal disease mostly congregated. Nowadays it was particularly important that the teaching should be in these centres, for arsenobenzol quickly changed the features of the disease in a patient. He would teach venereal diseases in a venereal disease department, starting almost from the first with the laboratory. It was very important that the student should appreciate the pathological as well as the clinical side—that he should thoroughly understand what was taking place inside the patient. It was generally agreed that the standard of diagnosis and treatment of these diseases in the Army had been raised from the date of the establishment of the school in connexion

with the hospital in Rochester Row. And the experience was that the clinics were better managed by men who had been taught in special venereal disease clinics and hospitals than by those who had been taught in a number of different departments in a general hospital. In his own department he found no difficulty in teaching, neither had he difficulties with patients. He thought the fear of patients taking offence, or of a pledge of secrecy being broken, was nothing more than a bogy.

Dr. H. M. HANSCHELL thought that venereal disease should be taught in the department which was in the position to treat it best—namely, the venereal disease department. The house physician in a hospital had many other things to attend to, and would find it a nuisance to administer the drug, a drug, moreover, which he did not yet know enough about. Even in dermatological departments of hospitals he did not think it was usually taught efficiently. Hospital staffs seemed to welcome having a venereal disease department to which cases could be transferred for treatment, and where students could see cases from the beginning to the cure.

Dr. W. J. O'DONOVAN emphasised the importance of teaching principles, which was of more value than teaching syphilis as syphilis. Some of the manifestations of this disease came primarily into special departments. Acute iridocyclitis, in which there was a red and painful eyeball was as dangerous to sight, if not speedily treated, as was glaucoma. Its differential diagnosis must be taught with that of other ocular lesions, and this teaching, along with the appropriate treatment, could not be given efficiently in a venereal disease department. It was impossible to escape the necessity of teaching syphilis in every department of a teaching hospital. In the matter of treatment, however, a special claim could be made for beds. The principle that venereal diseases must be kept separate implied that no one should take part in their treatment except the member of the staff in charge of the special department for them. He must run the whole department with all the specialties involved.

Dr. A. M. H. GRAY thought that a practical mean could be found between the views of Dr. Sequeira and Colonel Harrison. All agreed that it was essential to have a properly organised treatment department, and the only question was as to diagnosis. He felt that it was a great advantage for the student to see cases of syphilis in conjunction with cases of other diseases. It would be a tragic thing if syphilis were to be entirely removed from the various special departments. It had been his experience that in some hospitals the genito-urinary surgeons did not take much interest in acute gonorrhœa, and many cases of it were sent straight away to the treatment department. Hence it was important that the student should attend that department, not only to see early cases, but also to follow up the treatment. He had found but little difficulty in getting students to attend evening clinics, but they did not come as regularly or as often as they should. It would be different if questions on the subject were set in the examinations, which it was the students' immediate objective to pass. Attendance at his own clinic was compulsory, but the compulsion was not drawn too tightly.

Dr. DENNIS VINRACE said that every practitioner should know something about every disease, and a specialist should know all about his own department. Syphilis, he thought, had usually more importance attached to it than it deserved, and prevalence of these diseases had also been much exaggerated. If a man wished to specialise in them he should obtain an appointment as house surgeon at a V.D. hospital, or as assistant in a clinic.

Dr. MORNA RAWLINS said that she found the attendances of students at the clinics good, and there seemed little difficulty in getting patients to come. But gonorrhœa in women was difficult to demonstrate to a number of students.

Major E. C. LAMBKIN spoke of the disappointment in Army medical circles when the special hospital at Rochester Row had to be closed, as the subject had not been properly taught in the Army until the hospital was organised. Syphilis had now practically disappeared from the Army and only half a dozen beds were needed for it. Each special venereal hospital should have a special venereal laboratory. For teaching purposes, he thought that V.D. cases should be concentrated in one special department.

Colonel E. G. FRENCH said that he was a great believer in having special departments for these subjects in the hospitals, and favoured attendance at them being made compulsory. The general practitioner nowadays treated venereal disease himself instead of sending cases to the specialist.

Dr. F. J. H. COUTTS said it was highly important that the general practitioners of the future should have a real knowledge of venereal diseases. If a student was not taught differential diagnosis when he was passing through special departments there was something wrong with the teaching.

Dr. DOROTHY LOGAN said that at one time syphilis was met with in the surgical out-patients, in the medical wards, in the eye department and elsewhere, but there was no means of getting a continuous idea of the disease, such as the special department could now put before the student. She agreed that all departments should combine in giving this knowledge.

The CHAIRMAN reminded the meeting that the prime object of the Bill which was brought before Parliament had not been to secure tuition of the medical student. Training centres had been instituted by far-sighted people who knew of the ravages wrought by these diseases after all great wars, in order to cut down the incidence rate to the lowest possible figure. And the clinics had certainly justified themselves. In the campaign very great help was given by the lay press. The coöperation of various specialists was required in order to demonstrate differential diagnosis. The policy of the Society had been to secure the help of those not specially interested in venereal diseases, as a safeguard against an exclusive specialisation.

Dr. SEQUEIRA briefly replied, reminding his hearers that his theme had not been the training of venereal disease experts, but the tuition of the medical student in those subjects.

Dr. HANSCHELL showed a case of

Climatic Bubo.

The patient was a seaman (white), aged 43, who said that 20 years ago he had a wart on the glans penis. It had been cauterised, and left a scar. He had never had any other lesion about the genitalia. Nine weeks ago he was in Mauritius, and seven days after coitus the glands in the groin began to enlarge and become painful. He was ill, and had to cease work. At present there was nothing to be seen about the scrotum or penis. His temperature varied between 99° and 100° F., the Wassermann was negative, and the blood did not contain filaria. Climatic bubo, said the speaker, was fairly common in the tropics, and it seemed to be a venereal disease, because nearly always there was the history that it occurred a short time after connexion. It had not yet been reported in a woman. In men it was commonest in the uncircumcised. A specific organism had often been searched for, but so far had not been discovered. The usual treatment was to excise the infected glands, but it was found that they were all involved, and deep down. After such large removal he had seen elephantiasis of the penis supervene. The best treatment he had found was the intravenous injection of typhoid bacilli; this caused subsidence in a few days, and the illness was limited to a week or two. He used in this case a stock vaccine, and began with 100 million, intravenously with the man fasting. The dose was repeated in four days.

ROYAL SOCIETY OF MEDICINE.

SECTION OF EPIDEMIOLOGY AND STATE MEDICINE.

AT a meeting of this Section held on March 25th, Dr. S. MONCKTON COPEMAN, the President, who took the chair, opened the proceedings with a reference to the recent death of Dr. John Brownlee.

Dr. W. S. MCCLURE (Manchester) read a paper on the

Incidence of Pneumonia.

During the last ten years, he said, 398,523 deaths from pneumonia had occurred in England and Wales. The mortality was greater in the North than in the South, and greater in urban than in rural districts. Any rise or fall in the rate in England and Wales was shared alike by the North, the Midlands, and the South; there was, therefore, some factor, common to the country as a whole which influenced the prevalence of this disease. Mean air temperature was closely correlated with mortality from pneumonia, but climatic conditions were not responsible for the heavier incidence in the North. Fog was a minor and unimportant factor, but contributed to the occlusion of light from towns; absence of sunlight lowered the human vitality, though there was no evidence that it was a determining cause of pneumonia. Relative excess of the disease in the North was equalled by the excess of other infectious diseases and was due to greater aggregation of the populace. The greater the density of population in any area the greater the mortality from pneumonia. Overcrowding in areas and in individual houses was the essential factor responsible for excessive incidence of the disease. The remedy, therefore, was in the progress of housing and town-planning schemes. In the meantime every additional open space provided in a town and every overcrowded area dealt with would, of a certainty, tend to reduce mortality from pneumonia.

Dr. G. CLARK TROTTER considered that the care taken of children had more to do in protecting them from pneumonia than the weather had to do with causing it.

Dr. MAJOR GREENWOOD said that there was forthcoming a paper on pneumonia in London which seemed to show that overcrowding was more likely to be the cause of pneumonia in children, and weather the cause of pneumonia in the aged.

Sir WILLIAM HAMER pointed out that such a disease was not likely to be due to a single cause, adding he had been impressed by the suggestion that pneumonia was often preceded by a cold.

Further discussion followed.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF PATHOLOGY.

A MEETING of this Section was held on March 18th, Dr. R. J. ROWLETTE (in the absence of the President) in the chair.

Dr. A. R. J. DUNGAN read a paper on the rôle of the

Acetone Bodies in Diabetic Coma.

After a brief review of the literature, showing that the actual part played by the acetone bodies in producing the symptoms of diabetic coma was unsettled, Dr. Dungan described experiments demonstrating that dogs and cats could be free from symptoms while having in their blood concentrations of acetoacetic and β-hydroxybutyric acids greater than those commonly found in human diabetic coma. From this it was concluded that neither of these acids was likely to exercise a *direct* toxic effect on this condition. The experiments, however, also showed that with the former acid, and probably also with the latter, when sufficient had been administered to a dog the result was a curious delayed intoxication leading to prostration and death. The animals commonly died at a time when acetone bodies had almost disappeared from the blood, and one of the features of the intoxication was a resistance to the action of insulin, such as occurred in human diabetic coma. Dr. Dungan suggested that this latter condition might possibly represent a similar indirect intoxication with one or both of these acids. He described further experiments with acetone, showing that its effects were totally different from those of acetoacetic acid.

Dr. H. F. MOORE referred to the detailed and prolonged observations of which Dr. Dungan's paper was the fruit.

Dr. A. R. PARSONS asked if there was any danger of producing hypoglycæmia in a case of diabetes by pressing insulin when the urine was full of acetone and diacetic acid but there was only a very slight amount of sugar present.

Dr. H. R. MICKS referred to the resistance to insulin which was sometimes met with, apart from ketosis, and asked what caused this resistance. He mentioned a case recently reported, in which insulin had done very little towards lowering the blood-sugar, and said that it looked as if there was something else in the body, not a ketone, in diabetic cases which interfered with the action of insulin.

Dr. E. T. FREEMAN asked if the effect of the ketone bodies in dogs in the advanced stage of diabetes was at all comparable with what it was in human beings, and if ketone bodies formed as rapidly in dogs as they did in human beings.

Dr. DUNGAN, in reply, said that cases of diabetic coma had been rather rare in the hospital in which he had worked in America. When they did occur the patients were given massive doses of insulin, and ketosis disappeared almost immediately. Large doses of insulin should not, in his opinion, be given to a patient who had acetonuria, but was not in definite coma. He did not know what caused the resistance to insulin in some patients, unless it was gross pancreatitis or carcinoma.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH.

AT a meeting on March 15th Dr. L. H. Bryson described a series of cases of herpes zoster which had come under his observation during the past seven years. In contrast to Head's record of age incidence he had found the disease more frequent in patients over 25. He had discovered no epidemicity nor any relation to chicken-pox. Pain was usually a marked symptom, and increased in severity with the age of the patient. The pain might be referred to a position apart from the rash. In one of his cases there was at first severe pain on the radial side of the left forearm, accompanied with hyperæsthesia, whilst the rash appeared on the chest over the distribution of second and third dorsal nerves. The definite cutaneous and nervous lesions of herpes zoster, with their associated sensation, provided peculiar opportunities for the study of symptomatology. If the symptoms of herpes zoster could be accounted for, they would throw light on all symptoms. Dr. Bryson pointed out that all afferent pathways were the afferent tracts of reflexes having some other end-result than sensation, that sensation was the concomitant of a reflex, and that the reflex involved in the nerve lesion was probably a cutaneous capillary reflex. The skin lesion occurred over papillæ where the capillaries were most numerous. Considering the nature of the lesion, it was curious that tactile sensation was not interrupted. Anæsthesia was not a symptom, whilst hyperæsthesia was usual. He suggested that pain arose on the same reflex to which the thermal sensations were concomitant, in all likelihood a vascular one. Hyperalgesia was due to an interaction occurring in the neopallium between the impulses of normal tactile sensation and those arriving from the site of a lesion, not, as had hitherto been represented, occurring in the cord.

Reviews and Notices of Books.

EXOPHTHALMIC GOITRE.

By JOHN EASON, M.D., F.R.C.P. Edin., Physician to the Edinburgh Royal Infirmary. Edinburgh: Oliver and Boyd. 1927. Pp. 215. 12*s*. 6*d*.

THIS is a notable addition to the literature of thyroid disease, being a broad survey in which recent additions to our knowledge have received critical attention. It will be welcomed by all who are interested in clinical medicine.

The volume is divided into two parts, of which the first deals with anatomical and physiological considerations and with the clinical examination of the thyroid gland. Part 2 is devoted to the clinical features of the diseases which are now classified under the title of exophthalmic goitre, and to their pathology, pathogenesis, diagnosis, and treatment. As the author points out, ætiological and pathological considerations now show that the Graves's disease syndrome is a unity only in the same sense as is Addison's syndrome. In each case various causes and various pathological processes are associated with a well-defined clinical picture, the essential pathological change affecting the thyroid in one and the adrenals in the other. Just as syphilis, tubercle, atrophy, or malignant disease may each give rise to Addison's syndrome by restricting adrenal function, so also Graves's disease is the result of the action of a variety of causes which stimulate thyroid function. These factors all receive full consideration, and since the modern views are mostly set out in addition to those formerly held, the reader is able to consolidate his knowledge.

Sections of the book which require special mention include the chapter on pathology, in which the changes in the thyroid are fully discussed, both in terms of the terminology now in general use, and also from the point of view held by Scott Williamson and I. H. Pearce. Again, the clinical features are probably described more fully and completely here than in any other book dealing with the thyroid gland. Especially valuable are the sections devoted to the alterations in the heart and circulatory systems and particularly the blood pressure. The value of a knowledge of the pulse pressure in estimating the severity of the disease is emphasised. Other modern methods useful in the diagnosis of this condition are discussed, notably the estimation of the basal metabolic rate; this test is of considerable value in following the effects of various methods of treatment, but the author points out that when it is not available, observations of the pulse pressure are equally useful, and a number of cases are quoted to illustrate this point. In the chapter on treatment the reintroduction of iodine therapy is fully considered and the indications for its use and methods of administration are described in detail. The administration of insulin and glucose is also recommended in certain cases, and it is interesting to learn that the author considers this method of treatment to have a definite if restricted value in the treatment of Graves's disease.

PHYSIOLOGY.

Principles of Human Physiology. Fourth edition. By ERNEST H. STARLING, C.M.G., F.R.S., M.D., Sc.D., F.R.C.P., Foulerton Professor of the Royal Society. London: J. and A. Churchill. 1926. Pp. 1074. 25*s*.

Starling's Principles of Human Physiology needs no introduction to our readers. The fourth edition embodies the result of all those researches which have appeared during the past five years which are of fundamental importance. We note an account of E. C. C. Baly's work on the photosynthesis of hexoses, a new section on Neutrality and Reaction with descriptions of the methods of measurement of hydrogen-ion concentration. The work of A. V. Hill and his pupils on the relation between work done during muscular contraction and the speed of muscle shortening, is summarised, also that of A. V. Hill and Meyerhof on the time relations, quantitative analysis, and interpretation of the heat production during and immediately following muscular contraction. Several pages are devoted to the highly important and interesting researches of Pavlov and his school on the formation, types, and properties of conditioned reflexes. The section on the vitamins has been enlarged, and that on carbohydrate metabolism extensively altered to include a description of the isolation and preparation of insulin, and the mechanism of its action in both the normal and diabetic animal. Further additions include an account of the work of Bolton on duodenal regurgitation during gastric digestion, of C. Mann on hæmolytic jaundice, of J. Barcroft on the function of the spleen as a reservoir for red blood corpuscles, and of J. B. Collip on the parathyroid hormone. The changes in the sections on the coronary circulation, cardiovascular reflexes, and on the mechanism of urinary secretion have been occasioned almost entirely as the result of researches in the laboratories of the author. In spite of these many additions and alterations the bulk of the book has been reduced. This has been made possible by the omission of much that belonged strictly to the sciences of chemistry and anatomy, and is extensively covered in the textbooks dealing with these subjects.

The vast field of knowledge which modern physiology requires is admirably covered with a lucidity of expression which commands interest throughout the pages of this volume.

Neuere Ergebnisse der Physiologie. Von Dr. Phil. et Med. ERNST GELLHORN. Leipzig: F. C. W. Vogel. 1926. Pp. 447. M.30.

THIS volume has been compiled by the author on a background of 22 lectures on various physiological subjects, the choice of subject being determined by the degree to which recent investigation has advanced knowledge therein. Especial attention is paid to those branches of research which have yielded results immediately applicable to the interpretation of pathological states in man.

The book is thus suitable for the advanced student of physiology, and for those medical practitioners who desire to become acquainted with the results of recent researches. The first four chapters are devoted to the more modern conceptions of such physicochemical phenomena as osmosis, adsorption, membrane permeability, and electrical changes in living tissue in so far as they are of present significance in the interpretation of biological phenomena. These chapters also form a valuable introduction to the work, described in the later sections of the book, in which an attempt is made to interpret the more complicated reactions of individual organs in terms of the more simple dogmas of physics and chemistry. The work of J. Barcroft on the spleen, of O. Loewi on the liberation of substances having an inhibiting or accelerating action on the heart, and of A. Krogh, U. Ebbecke, and H. H. Dale and Richards on the capillaries, is clearly outlined. In connexion with this last subject, the author appears to have overlooked the fundamentally important work of Lewis and his collaborators on the reactions of the capillaries of the human skin. Further chapters deal with the results of recent work on the vitamins, the glands of internal secretion, and on the kidney. The work of A. V. Hill, O. Meyerhof, and G. Embden on the physical and chemical processes underlying muscular contraction is set out in considerable detail in two valuable chapters. There follows an account of recent advances in our knowledge of the physiology of the central nervous system, including a valuable account of R. Magnus's work, and the volume is brought to an end by three chapters dealing with the physiology of the sense organs.

The volume forms a useful survey of the recent work done in the particular branches of physiology

with which it deals. Its bulk could have been considerably reduced had some of the papers referred to been examined more critically, and had the interpretations placed by authors upon the results of their experiments been less readily accepted. However, to winnow the chaff from the wheat of scientific literature is a time-consuming and wearisome task, and the fact that references to current literature are, if anything, too extensive, will not be resented by readers who wish to keep up to date without having to study original articles. The printing, paper, and illustrations are excellent.

EARLY DIAGNOSIS OF THE ACUTE ABDOMEN.

Fourth edition. By ZACHARY COPE, F.R.C.S. Eng., M.S. Lond., M.D., B.A., Senior Surgeon to Out-Patients, St. Mary's Hospital, Paddington. London: Oxford University Press. 1927. Pp. 237. 10*s.* 6*d.*

THE fact that this little volume has reached its fourth edition is evidence that it must have filled a want. The author has succeeded in reducing the problems of the acute abdomen to their simplest forms, and in explaining with remarkable lucidity the means at our disposal for their diagnosis. The volume is illustrated throughout with diagrammatic drawings which enable the eye to grasp their meaning at a glance. Any surgeon may peruse the volume with pleasure and will be sure to get fresh light on many points.

To the general practitioner who is called upon to deal with the acute abdomen this account should prove of the utmost value.

PROCTOLOGY.

Traité d'Endoscopie, Rectoscopie, Sigmoidoscopie. Second edition. By R. BENSAUDE, Médecin de l'Hôpital Saint-Antoine, Paris. Paris: Masson et Cie. 1926. Pp. 180. Fr.100.

THIS edition is in every way a great advance on the former one published in 1919. Interest will centre chiefly round the coloured illustrations, by Mr. Frantz, of proctoscopy and sigmoidoscopy. These illustrations, numbering 84, show both the normal and pathological conditions, and for clearness of detail and accuracy of colouring they are unsurpassed; the average level of excellence is high, but the illustrations of hypertrophied anal papillæ and tumours are exceptionally fine. The coloured plates are now interspersed with the text instead of being collected at the end of the book and are described in six languages.

The text has been largely rewritten and several new chapters have been added. The large number of black-and-white illustrations include a series of drawings of microscopical preparations. In the section on cancer the author describes the invasion of the rectum by cancers arising in the ovaries and uterus, but there is no mention, either in this chapter or in that on benign tumours, of adenomyoma of the uterus involving the rectum. Perhaps in the next edition the author will have something to say regarding this interesting and difficult condition. In the chapter on strictures of the rectum and colon there is no mention of diverticulitis. One would have liked to learn what the author considers characteristic of the view per sigmoidoscope of the lower end of a stenosing diverticulitis, and whether endoscopy affords any means of distinguishing this from a constricting carcinoma. Is œdema of the mucous membrane below the stricture more marked with diverticulitis than with carcinoma?

The final chapter on treatment describes zinc ionisation, the injection treatment for piles, and the application of radium in inoperable cancer of the rectum. The author advocates the use of diathermy for the removal of benign tumours, and illustrates an ingenious modification of the usual crocodile forceps and snare for use through the sigmoidoscope; the shafts of the instruments are insulated and allow diathermy to be applied through the jaws of the forceps or the wire snare. This would appear to permit of a very radical and efficient method of removing simple tumours, and is one which should be generally adopted in this country. A bibliography is appended at the end of the work.

THE CHARAKA CLUB.

Proceedings of The Charaka Club. Vol. VI. New York: Paul B. Hoeber. 1925. Pp. 145. $4.

THE Charaka Club, named after a Hindoo physician, called the Hippocrates of India, was organised in 1898 by a group of New York physicians who sought recreation and stimulation through excursions into literary, historical, and artistic fields. The sixth volume of the proceedings of this club opens with a delightful paper by Dr. G. H. Walton, who discusses the ever-present question of "Why other people and things annoy me so much," though it is not everyone who will have the courage to say in print as does Dr. Walton, "I wonder what it is I do that annoys everybody else"? Dr. Charles L. Dana contributes a little paper upon Dr. John Ursinus, a French medical man, who in 1541 published a work dealing with the medicinal properties of certain animals, and Dr. Dana credits him with being the originator of opotherapy. But remedies taken from animals were dealt with long before Ursinus's time by Pliny the Elder, in whose natural history will be found a number of astonishing prescriptions. An interesting paper is that by the late Dr. A. G. Gerster (the subject of an appreciation on p. 37 by Dr. Sachs) entitled, "A Letter on the Theory of Music." The paper does not say much about the theory, but it gives excellent advice as to how to appreciate music properly; Dr. Gerster evidently had a whole-hearted admiration for Bach, though curiously enough he makes no mention of his organ music. Dr. F. S. Meara supplies an admirable article upon that artistic printer, John Baskerville, whose editions of the Prayer Book and many of the Latin classics are well known. The first book to issue from the Baskerville Press was the Royal Quarto Virgil, published in 1757. There is a trap connected with this work which Dr. Meara does not mention, but all book lovers should know. An edition was reprinted in 1771 with the original date (1757) on the title page. The real 1757 edition may be known by the heading to the tenth book which reads Liber decimus Aeneïdos, while the 1771 reprint has Aeneidos Liber decimus. Among the subscribers to the 1757 edition were John Fothergill, — Heberden, M.D. —i.e., William Heberden the elder, John Ash, M.D., Birmingham, who took two copies and was the first physician to the General Hospital at Birmingham, and sundry other medical men not so famous, such as — Akinside, M.D., who may, however, be Mark Akenside the poet physician. Among non-medical names those of Sam Johnson, A.M., Benjamin Franklin, Esq., F.R.S., of Philadelphia, and Thomas Gray, A.M., of Pembroke Hall, Cambridge, are notable.

MICROSCOPICAL ANATOMY OF THE IRIS.

By M. WOLFRUM, Professor at Leipzig. Berlin: Julius Springer. 1926. Pp. 218. M.16·50.

THIS is a section of the third chapter of the second edition of the Graefe-Saemisch Handbuch der Gesamten Augenheilkunde, a colossal work only to be compared in size and scope to the American Encyclopædia of Ophthalmology. As in that work, the sections are divided between a large number of collaborators. This volume is a considerable treatise dealing with the anatomy of the human iris, with several references to the anatomy of the iris in animals, especially apes.

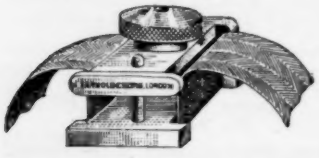
There are still points concerning the minute anatomical structure of the iris that cannot be considered as settled. Fuchs describes the anterior surface of the iris as bounded by an endothelium, and Koeppe, from observations with the slit lamp, supports this. Wolfrum throws doubt on

it, preferring to regard the so-called endothelial cells as merely flattened cells of the iris stroma. Koeppe describes a lymphatic system under the so-called endothelium, which Wolfrum prefers to regard as merely the anastomosis of processes from the stroma cells. With regard to the vascular system, Wolfrum finds that there is no true circulus arteriosus minor, the vessels usually described by this name being, in fact, mostly obliterated and derived from the fœtal pupillary membrane, microscopical remains of which, he tells us, are present in 45 per cent. of normal cases as seen under high magnification. We do not gather his views on the circulus arteriosus major, which Thomson Henderson believes to be not actually arterial at all, but venous, looking upon all the vessels that perforate the sclera in the ciliary region as veins, contrary to the generally accepted teaching (Trans. Oph. Soc., 1908, p. 167). This is surely a point that ought to be cleared up in an authoritative work. With regard to the disputed existence of a dilator muscle of the iris, the modern view that the fibres adjacent to the posterior layers of the iris are really a dilator muscle is supported and may be considered proved. Some authorities have maintained that the cells of the stroma take part in the active dilatation of the pupil, but the conclusion of Wolfrum is that they do not, at any rate, in man. With regard to pigmentation the physiologically important pigment cells exist almost exclusively in the posterior epithelial layer of the iris. The pigment cells of the iris stroma, to which the colour of the eye is mainly due, are not normally present at birth in the white races, and when once laid down do not alter through life except as the result of degenerative or senile changes. The histological structure of the iris is of considerable interest in connexion with its relatively enormous capacity of contraction and dilatation, and with the alleged absorption through the crypts of its anterior surface and the circulation of the ocular fluid; but the physiological problems arising from this latter function, if it exists, are not discussed by Prof. Wolfrum. His contribution is valuable chiefly as a work of reference to the microscopical structure of the iris; the figures, especially some of cells under high magnification, are extraordinarily clear.

New Inventions.

A FINE ADJUSTMENT SCREW FOR SPHYGMOGRAPHS AND POLYGRAPHS.

Sphygmographs and polygraphs, as ordinarily supplied, have a fixation screw for the tape and an adjustment screw for pressure of the pad on the artery, but there is no provision made for fine adjustment of the pressure of the apparatus itself on the wrist and thereby on either side of the radial artery. In order to remedy this defect, I have designed a fine adjustment screw (shown in the illustration) which can be immediately fixed to existing instruments, to be used after the fixing screw has been tightened. By its means the pressure of the apparatus on either side of the artery can be finely adjusted independently of the pressure of the pad on the artery, and it enables the observer in a very few seconds to obtain the best excursion of movement from the recording needle.

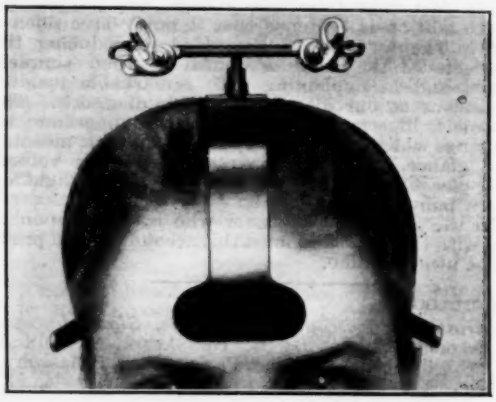


The special screw may be obtained from Messrs. Arnold and Sons (John Bell and Croyden, Ltd.), 50–52, Wigmore-street, W.1.

EDGAR F. CYRIAX, M.D. Edin.

MODELS OF THE LABYRINTH.

MODELS of the labyrinth (King's College Hospital pattern), a specimen of which is shown in the illustration, have been made for purposes of investigating labyrinthine diseases and for teaching students. They are double natural size, and are made of Wood's fusible metal, which is sufficiently strong for ordinary purposes; the ampullary ends are painted in different colours in order to show them up. It is not difficult to make reproductions of the semicircular canals and cochlea from one petrous bone, and it is also easy to make models of the labyrinth if accuracy is not desired. But the intention of the present writers has been to produce a model which would be properly orientated. As previously described in the Proceedings of the Royal Society of Medicine, the method used was to fix a hollow tube between the internal auditory meatus of a dry skull, and to hold this hollow tube in place by means of a rigid frame, which had bars



clamped on to the side of the skull in such a way that the lower edge of each bar coincided with the Frankfort plane—that is to say, the upper margin of the bony external auditory meatus and the lowest point of the orbit. Metal was run through the foramen ovale of one side to fill the cochlea and semicircular canals of that side, and to pass across the hollow tube to the opposite labyrinth which was also filled, the hollow tube being rigidly held in place by cement. The next step was to remove the bone and to extract the complete model in one piece. The casting presented considerable technical difficulties, which were overcome by Mr. Shaw, who produced an intact model at the Royal Dental Hospital. Enlargements were then made to double size, not by a modelling machine as had been hoped, but by free-hand work. The models were made in silver by Mr. Thomas, seal engraver and medallist, who exercised extreme care in getting details accurate. Having secured the enlarged model, it was then necessary to arrange for reproduction in mass. This work was done successfully by Messrs. Gerrard, furriers and naturalists, who made piece moulds and cast the two labyrinths together in Wood's metal. The original frame was made by Messrs. Mayer and Phelps, and they have made head frames with a pointer to lie parallel with the Frankfort plane in such a way that when the frame is on the head the labyrinth lies in correct orientation in all respects. The patient's head can then be put into any position and the exact relations of each of the canals are seen; rotation and caloric tests can be carried out with the frame in position. It must be remembered that there may be slight variations in the inclination of the canals in individual skulls.

The whole apparatus of enlarged models and head frame can be obtained from Messrs. Mayer and Phelps, 59, New Cavendish-street, London, W. 1.

A. H. CHEATLE, C.B.E., F.R.C.S. Eng.
V. E. NEGUS, M.S., F.R.C.S. Eng.

THE LANCET.

LONDON: SATURDAY, APRIL 2, 1927.

SURGERY OF THE SPINAL CORD.

WE publish in our present issue two communications which demonstrate the remarkable difference in purpose and technique between operations performed in the same topographical area. Prof. OPPEL, by the skilful removal of a mechanical obstruction in the spinal column, enabled an injured patient to obtain normal movement of the head; while Mr. DONALD ARMOUR, in his last Lettsomian lecture, concludes a review in which operation on the spinal column is considered mainly as a means of access to lesions of the spinal cord. The surgery of the spinal cord and its membranes, with which Mr. ARMOUR deals so lucidly, necessarily dates its birth in this its modern form from the rise of aseptic method, but its origins are lost in unmeasured antiquity, and we owe a deep homage to those who laboured so hard to form it in the womb of time. Four hundred years ago AMBROISE PARÉ was urging surgeons to operate for the relief of compression of the spinal cord, but 2000 years had then gone by since HIPPOCRATES had discussed the reduction of spinal dislocations and described with unerring accuracy the mechanism of compression in Pott's disease and its independence of angulation. Yet so far as is known CLINE in 1814 was the first deliberately to remove a depressed vertebral arch, thereby arousing a storm of controversy in the course of which CHARLES BELL denounced such surgery in no measured terms, whilst ASTLEY COOPER frankly described its opponents as blockheads. It is pleasant to think that if the daring of an Englishman aroused the controversy it was the skill of a Scotsman which laid it. In 1883 WILLIAM MACEWEN operated upon a case of complete paraplegia due to Pott's disease with brilliant success, following this up with equal success in a similar case due to a fracture-dislocation. In 1887 the diagnostic skill of GOWERS and the manipulative dexterity of HORSLEY combined in the successful removal of a tumour compressing the fourth dorsal segment of the cord and opened up a new epoch in neurological surgery. Methods of access to the cord having now become a matter of established surgical routine, recent effort has been directed to greater accuracy in the diagnosis and localisation of organic lesions of the cord. It is known that very slight injury to the arachnoid will lead to the development of adhesions in the subarachnoid space and to a block more or less complete in the circulation of the cerebro-spinal fluid. The diagnosis of a spinal lesion thus resolves itself into two questions: first, the evidence of a block, secondly, its precise localisation.

A block in the cerebro-spinal circulation leads to the stagnation of the fluid below it and to the congestion of the meninges, with the very remarkable result that the composition of the fluid is entirely changed. Instead of a minute trace of protein it may now contain as much as 2 per cent., whilst in addition it may absorb from the congested vessels altered blood and fibrinogen. Thus an increase in the amount of protein, the presence of a yellow pigment, and occasionally spontaneous clotting will establish beyond doubt the presence of an organic block, and this invaluable information may be gained with no greater risk or inconvenience than is involved in a lumbar puncture. By the introduction of lipiodol into the spinal theca it is possible in a large number of instances to give visual demonstration on an X ray film of the site of the obstruction. There are, however, considerable difficulties in the interpretation of the results, there are many possible fallacies, and there is undoubtedly some reason in a hesitation to introduce into immediate contact with the spinal cord a foreign substance which remains unabsorbed for a very long period. Moreover, modern methods of neurological analysis enable an accurate localisation to be made by purely clinical methods in 98 per cent. of the cases, so that there is no real necessity in general for such artificial aids. In exceptional cases, however, where the existence of a block has been established, lipiodol does furnish a definite aid in its localisation.

The relief of intractable pain is one of the most serious problems of medicine, and towards its solution by surgical means an immense amount of laborious research has been devoted in recent years. The splendid work of O. FÖRSTER on division of the posterior roots has fully justified the association of that operation with his name, but it is of interest to notice that the operation was carried out for the first time by W. H. BENNETT in 1888. In the relief of pain where nerves are involved in malignant growth or in scar tissue the operation has met with great success, but its application to the severe lightning pains of tabes has been disappointing. More subtle and more daring is the surgical division of the anterolateral tract of the spinal cord, proposed by W. G. SPILLER, and first carried out by E. MARTIN in America. There is in surgery no more elegant application of fine anatomical detail to the treatment of disease. The operation itself is of the most delicate order, and its results have been on the whole very successful. In 1915 H. S. SOUTTAR at the West London Hospital applied the method to the relief of gastric crises of great severity in tabes, with immediate and permanent success. The operation has since been performed extensively by C. H. FRAZIER, M. M. PEET, and other surgeons, who have fully established the soundness of the procedure.

REFLECTIONS ON THE HUME-SPRY CASE.

ENTIRELY favourable though it was, the verdict for the defendants in the HUME-SPRY case cannot compensate them for the annoyance and anxiety of 15 days actual litigation, for the many weeks of preparing to resist the allegations now shown to have been without foundation, and for the prolonged interruption of their daily work. Nor can judgment with costs repay them the expense of the proceedings. So long as the discharge of professional responsibilities under the Lunacy Act can thus be rewarded with a heavy loss in time and money, the present state of the law cannot be regarded with equanimity. The Royal Commission on Lunacy, in the report issued last July, recommended that a plaintiff should be obliged to discharge the onus of proving bad faith or negligence on the part of the certifying doctor instead of the burden being placed—as at present, in spite of the apparent intention of Section 330 of the Lunacy Act, it sometimes seems to be—upon the doctor to prove positively his own good faith and reasonable care. This is no great change, but, for what it is worth, it should be made at once with the

addition of all possible safeguards for the medical profession against the indiscriminate institution of civil proceedings. It will doubtless be said that the Parliamentary time-table will not allow the introduction of fresh legislation; but there is no reason why a draft Bill should not be prepared and circulated forthwith. While any such legislation is under consideration, the principle of the Public Authorities Protection Act must be strengthened rather than weakened; for a busy medical practitioner is at a serious disadvantage if suddenly called upon to meet allegations about a patient whom he has certified many months before, and it is unfair to prejudice his defence by challenging his recollection upon details which he has had time to forget. It must be borne in mind, too, that the machinery of reception orders imposes upon the medical profession duties of an exceptional kind.

The evidence of lunacy given by a medical certificate that a person is of unsound mind and requires detention under care and treatment resembles the evidence in no other kind of judicial proceedings. If the matter were conducted in the normal judicial fashion, three rules would apply which the nature of the proceedings excludes. First, the person whose mental condition is being investigated would be entitled to have a categorical statement of the matters alleged to impeach his sanity and he would be entitled to make a specific reply; secondly, all hearsay statements would be shut out; and, thirdly, the proceedings would take place in public. A fourth rule might then follow—namely, that the doctor upon whose evidence the judicial authority's decision will depend would be entitled to complete privilege and would be protected from legal consequences like any other expert witness before any other judicial tribunal. The contents of the medical certificate are understood to be privileged in the sense that a libel action cannot be founded upon them; but the extent of the privilege should not thus be limited. In no other form of judicial inquiry are expert witnesses liable to be held legally responsible if a party afterwards objects to the consequences of the tribunal's decision. The public probably does not realise that the medical certificates are by no means automatic in the obtaining of a reception order. The Lunacy Act requires that the certificates shall be considered by a judicial authority who for this purpose has all his normal jurisdiction to administer oaths and summon witnesses. The judicial authority has a statutory duty to consider the evidence, to decide whether he shall personally see and examine the alleged lunatic or not, and to satisfy himself whether a reception order may be made forthwith or whether further inquiry is necessary. If he makes the order, the alleged lunatic has afterwards all the safeguards furnished by periodical examination and by the enlightened administrative measures of the Board of Control. In the debate on lunacy recently initiated by Earl RUSSELL in the House of Lords, good reason was given for believing that the supervision of the Board of Control (composed of expert medical and legal members) is a more valuable check upon the certifying doctors' certificates than is the inquiry conducted by the judicial authority before the order is signed. It may be so; but while the judicial authority is retained for the purpose of examining the evidence and of signing the reception order if satisfied by the evidence, the decision of the judicial authority should be final unless it is overruled on appeal; in any event it should not be legally possible to go behind the judicial decision and attack the witnesses unless the latter have been guilty of perjury, subornation, or criminal conspiracy.

Meanwhile, since he is unprotected, the doctor who signs a certificate must take care not to expose himself to attack. He would be well advised to make a preliminary draft of the statement of facts upon which his opinion is formed, and to go through it in the light of possible cross-examination in a court of law in future years. He should pigeon-hole any notes he has made of the case, and he should be more careful than ever to study the marginal instructions upon the certificate form, and to remember that the Act requires him to distinguish between facts observed by himself and facts communicated by others, Parliament having forbidden a reception order to be made upon a certificate founded only upon facts communicated by others. He will not need to be reminded that he will encounter prejudice on the part of persons who suspect that doctors exist to obstruct the liberty of the individual and to segregate in strict confinement all potential Shakespeares, Isaac Newtons, and Beethovens. He will find others who hold the primitive belief that to treat a lunatic is an interference with an all-wise Providence. Finally, he may find that his worst troubles come from within his own profession. Cynical laymen have been heard to remark that, however high the reputation of a medical practitioner, however long his experience and however great his care, some ingenious member of the same calling can always be found to come into court and accuse him of negligence. In the HUME-SPRY case, the cynics have observed, an expert witness was called for the plaintiff who, seeing Mr. HUME-SPRY apparently for the first time in December, 1925 (more than two and a half years after the date of his certification) was prepared to state with confidence in the witness-box that he could find no evidence of the plaintiff being now, or having ever been, insane; that he was not insane at the time when he was certified, and that he should never have been certified. Unquestionably if one medical practitioner thinks that another has improperly led a magistrate to confine a sane man in a lunatic asylum, he must say so when asked in a court of law; truth must not be sacrificed to professional esprit de corps. But the jury doubtless remembered the old proverb that an ounce of fact is worth a ton of theory; it was the facts which were fatal to the plaintiff's claim.

HEART DISEASE AND PREGNANCY.

DIFFICULT decisions often have to be made when a woman with heart disease becomes pregnant, and a recent discussion[1] between physicians and obstetricians at Birmingham serves to show what differences of opinion obscure current teaching. There are plenty of opportunities for making mistakes, for even in its more advanced stages heart disease seems to have little inhibitory effect on conception, and troublesome cases—each with its own special problem—are constantly being encountered.

Every variety and combination of cardiac lesion may be seen in pregnant women, the commonest being mitral stenosis, but it is not so much the site as the extent of the damage and the degree of compensation established which are important, though some lesions imply, of course, a worse prognosis than others. There is little evidence of myocardial hypertrophy during normal pregnancy, but there is no doubt that extra work has to be done, and the cardiac output is said to be increased by as much as one-third during the month or two before term. This throws extra

[1] Meeting of the Midland Obstetrical and Gynæcological Society at the Medical Institute, Birmingham, on Feb. 8th.

work on the muscle, the damaged heart is liable to fail, and a certain number of women with advanced heart disease and poor compensation are inevitably destroyed by the strain either of pregnancy or labour. On the other hand, it must be remembered that by no means all the severe cases end like this, and where a lesion is slight and more or less stationary the patient may pass through several pregnancies without obvious ill effect. Cases in the intermediate group are those which call for the most careful consideration, for a wrong or a delayed decision may easily have fatal results. Hearts in which the damage is of moderate severity often pass through the early months of pregnancy without serious distress, but during the last month or two they show considerable loss of compensation and this means a definite risk of failure, either before or during labour. Many of the patients make the efforts of parturition without any great difficulty, and although there is some danger that the heart may fail during the early part of the puerperium, the degree of compensation generally improves. Whilst opinion is divided as to whether permanent damage is done to the heart by the added strain of pregnancy, most authorities believe that some of the damage is permanent, and in the majority of households, of course, the care of a new child throws an extra burden on the mother.

Naturally enough, there is no one line of treatment that is suited to all cases, but some general therapeutic principles are becoming established. Any woman who has had failure of compensation apart from pregnancy, or in previous pregnancy, should not be allowed to go to term. In these women conception ought to be prevented, but if it should occur, abortion should be induced as early as possible. Most operators prefer to use some simple method, and at the Birmingham meeting Mr. CHRISTOPHER MARTIN emphasised the ease with which pregnancy may be ended by introducing a solid rubber bougie. The only disadvantage of this procedure is that it does not permit of sterilisation, and some obstetricians prefer to remove the uterus, even where the cardiac condition is dangerous. In the less severe cases, in which failure of compensation only becomes apparent in the latter part of pregnancy, two plans are available. Rest in bed and careful medical treatment will often bring about some improvement, and the patient may be allowed to go to term and into labour naturally. The second stage should be shortened as much as possible by operative delivery to avoid the stress of the second stage pains. Few now favour the induction of premature labour, as the patient is not saved an appreciable amount of work by this measure. The alternative is to perform a Cæsarean section at term or a little before it. Here, again, the patient should be treated medically for a few weeks previously. The operation can conveniently be performed under intrathecal stovaine anæsthesia, although experience shows that ether may be used with safety. The great advantage of this method is that the patient can be sterilised at the same time, either by division of the Fallopian tubes or by hysterectomy; the former seems to be the better procedure under the circumstances. There is at present a definite tendency to regard Cæsarean section as the correct method of dealing with the more severe cases of heart disease complicated by pregnancy, and on the whole results have been good. In accepting this doctrine, however, it must not be forgotten that many lives have been lost owing to delay inspired by the hope of securing a viable child. Abortion should be early if the woman is unlikely to get safely to the last month or so of pregnancy, and the co5peration of cardiologist and obstetrician should also be early if the patient is to have the best possible chance. Combined discussion serves a useful purpose, for the obstetrician sees a large number of cases in which no harm results from labour, whilst the physician is likely to be called only to such cases as are in extremis. An exchange of views can do nothing but good; the only danger is that it may be made to excuse a policy of vague anticipation.

Annotations.

"Ne quid nimis."

THE LISTER CENTENARY.

THE object of keeping centenaries is to focus attention on the comparatively recent past, and the celebrations are only useful if they prevent us from thinking our environment and methods inevitable. The birth of Lord Lister on April 5th, 1827, is being celebrated at Glasgow this week, and in London from April 4th to 6th. The ceremonies are taking many forms, but none of the contributions is likely to be more interesting than the personal reminiscences of those who worked under Lord Lister and knew conditions before he did his work. A foretaste of these contributions is given by Sir Hector Cameron in a brief monograph [1] dealing with Lister's work in the wards of the Glasgow Royal Infirmary from 1860 to 1869. The position of surgery before that time was, as he shows, barely conceivable to the present generation. "The ultimate fate of every man who had his body wounded, whether by accident or by surgical operation, was a matter of absolute uncertainty." When Lister was appointed to the Infirmary he was given charge of wards Nos. 24 and 25 on the ground floor, in the new surgical block which had been opened in the previous year. Pyæmia, erysipelas, and hospital gangrene were rife, notwithstanding the newness of the buildings, and about 1868 the mortality became so excessive in ward 23—which was in charge of a colleague—that it had to be closed. The trouble was attributed to a foul drain, but it was found that some four feet away from the wards there was a multitude of coffins, containing the remains of those buried during the cholera epidemic of 1849. Yet, in Lister's own words "at the very time at which this shocking discovery was made, I was able to state . . . that during the previous nine months, in which the antiseptic system had been fairly in operation in my wards, not a single case of pyæmia, erysipelas, or hospital gangrene had occurred in them." The ward in which these marvellous results were obtained is a place which might well have been preserved as a memorial both of the worker and his work, but it has now been destroyed. A second centenary contribution [2] sets out with admirable restraint the efforts to preserve it which were made by the Glasgow Lister Memorial Committee, and the reasons why these efforts failed. In his introduction, Lord Blythswood points out that the book is published to dissipate any idea that the citizens of Glasgow as a whole were responsible for the demolition of the ward; "the responsibility for this act of vandalism lies at the door of a comparatively small majority of the total number of Managers constituting the Board of the Glasgow Royal Infirmary in the year 1923." The book consists of four sections together with appendices. The first and third are by Mr. Ernest Maylard, B.S., who contributes an appreciation of Lister and his work, and an account of the efforts for the preservation

[1] Reminiscences of Lister and of his Work in the Wards of the Glasgow Royal Infirmary 1860–1869. By Sir Hector Clare Cameron, C.B.E., M.D., C.M., consulting surgeon, Glasgow Royal Infirmary. Glasgow: Jackson, Wylie and Co. 1927. Pp. 45. 1s.

[2] Lister and the Lister Ward in the Royal Infirmary of Glasgow. A Centenary Contribution. Glasgow: Jackson, Wylie and Co. 1927. Pp. 132. 12s. 6d.

of the Lister ward. The second, by Mr. James A. Morris, architect, gives an excellent account of the Infirmary buildings, whilst the fourth is by Mr. L. W. G. Malcolm, conservator of the Wellcome Historical Medical Museum, the authorities of which have reconstructed a section of the original ward, the interior furnishing and fitting being those which actually stood in it when Lister began his antiseptic practice.

The programme of the celebrations in London makes it certain that there will be addresses here as appropriate as these two memorials from Glasgow. Though the details have already been published in THE LANCET, it is perhaps convenient to set them out again in full:—

PROGRAMME OF CELEBRATIONS IN LONDON.

MONDAY, APRIL 4TH.

11 a.m.—Reception of Delegates by H.M. the King at Buckingham Palace.

3 p.m.—King's College Hospital. *Addresses on Lister's Personality by Sir Watson Cheyne, F.R.S., Sir Lenthal Cheatle, and others who served under Lord Lister. All old students of the hospital and their friends are invited.

8.30 p.m.—Royal Society of Medicine. *Reception by Sir James Berry (the President) and Lady Berry at 1, Wimpole-street, W.1. (Admission by Ticket only. Evening Dress.) Address at 9.30 P.M. by Sir StClair Thomson, entitled "The Centenary of Lister: Recollections by one of his House Surgeons."

TUESDAY, APRIL 5TH.

11.30 a.m.—*Reception of Delegates by the Prime Minister, and Presentation of Addresses, in the Hall of the British Medical Association, Tavistock-square. (Morning Dress: Academic Dress). Short Discourses by Prof. Henri Hartmann (Paris), and Prof. Max Ritter von Gruber (Munich), dealing with the effect of Lister's work on surgical and pathological science and practice in their countries.

4 p.m.—Royal College of Surgeons of England, Lincoln's Inn-fields. *Conversazione. (Morning Dress).

7.30 p.m.—Merchant Taylors' Company. * Dinner at the Company's Hall, 30, Threadneedle-street, E.C.4. (Evening Dress with Orders and Decorations.)

WEDNESDAY, APRIL 6TH.

11.15 a.m.—Westminster Abbey. *Memorial Service, with address by the Bishop of Birmingham (Rt. Rev. E. W. Barnes, F.R.S.). (Morning Dress: Academic Dress.) Delegates will have an opportunity of placing wreaths at the Memorial Tablet to Lord Lister in Westminster Abbey.

3 p.m.—*Discourses in the Robert Barnes Hall of the Royal Society of Medicine, Wimpole-street, W.1, by Sir Charles Sherrington, O.M., F.R.S., Prof. W. Bulloch, F.R.S., and Sir Berkeley Moynihan, P.R.C.S., on Lister as Physiologist, Bacteriologist and Surgeon. (Morning Dress.)

9 p.m.—Royal Society. *Conversazione at the Society's rooms in Burlington House. (Evening Dress with Orders and Decorations.)

Ladies will be admitted to the ceremonies marked *

THE HÆMOLYTIC AGENT IN ADDISONIAN ANÆMIA.

IT is now very generally agreed that achlorhydria is one of the few practically constant features in pernicious or Addisonian anæmia, and a large number of observers believe that a similar gastric condition occurs in subacute combined degeneration of the spinal cord. An increasing body of opinion accepting this view ascribes the severe and progressive anæmia of both diseases to hæmolysis resulting from bacterial infection of the intestine, this infection being secondary to loss of the protection normally provided by the acid gastric juice. Attempts to pass from this hypothesis to the actual demonstration of a specific hæmolytic agent present in the small intestine of such cases have so far failed. It has been shown, with some constancy, that the duodenal contents are less uniformly sterile in cases of achylia gastrica, but the presence of hæmolytic streptococci, though reported in some cases, has been denied in others. The whole subject is fully reviewed by Dr. F. A. Knott in the current issue of *Guy's Hospital Reports* (lxxvii., 1, 1927). Working in conjunction with Dr. J. F. Venables and Dr. A. F. Hurst, this observer has been able to make extensive bacteriological observations on 37 cases of Addisonian anæmia. In about 90 per cent. of these he was able to demonstrate the presence in the intestine of hæmolytic strains of bacteria, but he is careful to point out that the infection was not necessarily from sources above the pylorus, and that in many cases the bacteriological strains were predominantly of the fæcal type, particularly *Bacillus coli hæmolyticus* and Gram-positive anaerobes. It is not, as Dr. Knott remarks, necessary to postulate that one and only one organism can be responsible for the hæmolysis so prominent in this disease, and it is quite possible that achlorhydria, by permitting large numbers of living organisms to pass through the stomach into the duodenum, may promote a catarrhal state of the intestinal mucosa which facilitates not only its infection with all kinds of fæcal bacteria but also absorption of whatever toxins these organisms may produce. Dr. Knott's personal opinion is that in all these cases invasion occurs both from above and below and that it is essentially the fæcal bacteria which produce the distant changes both in blood and nervous tissues, the relative incidence of damage on the two types of tissue being largely determined by the predominant type of organism. The essay as a whole is evidence of the keenness with which research is being pursued into the causation of a most baffling and serious disease, and it is further typical of the high standard of work which characterises this and previous numbers of the *Guy's Hospital Reports*.

VENTILATION.

THE so-called all-electric house, which is civilisation's latest attempt to save labour and secure comfort, has introduced problems of ventilation which have not yet been generally recognised. In ordinary houses there are chimneys and flues which allow the escape of overheated and vitiated air, but the occupants of an all-electric house, unless special provision is made, must always be taking steps to keep the air fresh. Though open windows are in fashion, the conditions and simpler tests for successful ventilation are not subjects of common information. This bids fair to be changed by suitable instruction in schools. The ideal is that air should be reasonably free from smoke, dust, microbes, and odour; it should not overheat nor chill the body, and it should be neither too dry nor too moist. To make sure of all these conditions requires rather complicated tests, but it is quite easy for teachers and scholars to take readings from a dry-bulb thermometer every few hours and adjust their windows accordingly. A recent book by Dr. Thomas D. Wood and Miss E. M. Hendriksen,[1] shows that in many schools in the United States the keeping of records is part of the daily routine. They describe two inexpensive systems of window-ventilation which have lately been found successful. They are called respectively the Watt and the Wheeler system. In the Watt system the windows are opened at the top, the blinds being placed lower down so that they do not blow about or interfere with the entrance of the air; in some cases the blinds are in two halves, the top half to pull up and the bottom half to pull down. In the Wheeler system the air enters at the bottom of the window, but is deflected upwards. In both systems the exhaust ducts leading away impure air are situated at some distance from the windows, and flags are placed at the openings to see that the current is passing in the right direction. The size of the openings is regulated according to the temperature in the room, heat being supplied by radiators. Such an arrangement is simple to work and only depends on the presence of a person with an elementary knowledge of ventilation. Many expensive systems prove useless in practice for want of this knowledge, but it is easily acquired. In Great Britain the optimum temperature indoors is about 60° F.;

[1] Ventilation and Health. By Thomas D. Wood, A.M., M.D., Professor of Physical Education, Teachers' College, Columbia University, New York, and Ethel M. Hendriksen. London and New York: D. Appleton and Co. 1927. Pp. 210. 5*s*.

in America it is nearer 64–68° because in winter the air there is drier than in England owing to the cold out of doors. If the air is dry a higher temperature is necessary for comfort. In this country the air in houses rarely becomes excessively dry, for the indoor relative humidity is usually between 40–60. In America, however, it may fall as low as 20, and special methods for moistening the air are being introduced. By valve attached to the radiator supply pipe steam may be passed into the room until the windows show moisture on the panes; this steaming may be carried out in schools both before and after the children occupy the class-rooms. In small houses in America it is advised that pans of water should be placed on each radiator so that at least half a gallon of water daily evaporates into a room of average size. In England, however, this problem hardly arises. When people complain of dryness of rooms, the real trouble is often a leak which permits the escape of fumes from radiators or gas or coal fires. In a house without chimneys it is particularly essential to see that a suitable exit is provided for the products of combustion, as was cogently pointed out in our columns not long ago by Dr. J. S. Owens (THE LANCET, March 5th, p. 514). Laying stress on the dangers of the portable flueless heater as used in living rooms and bedrooms, he laid down the principle that "the heating and ventilation of houses should be inseparable, and a method of heating which does not in itself produce a ventilating effect should be looked on with suspicion." At the present time it is doubtful whether this suspicion is sufficiently widespread.

THROMBOSIS OF VEINS.

IN his article on phlebitis of the lower limbs and abdominal wall, which we print on another page, Dr. W. Bain remarks on the scant attention paid to this not uncommon malady in most text-books of medicine, Allbutt's System being a notable exception.[1] Blood-clotting in vivo is a complex process which has been studiously investigated. There are two kinds of thrombi—the coagulative and the agglutinative. The latter are due to agglutination of the red cells and are quite different from those due to coagulation. They are found chiefly in the capillaries, but may occur in veins, and are encountered in infective diseases, such as enteric and pneumonia, and may account for the transient congestions of influenza. The substances that produce coagulation of the blood are fibrinogen, thrombin, and calcium salts. The two theories regarding the method of production agree in this, that fibrin is derived from fibrinogen. The points in dispute are in regard to the origin of thrombin and the mode of action of the calcium ions and the thromboplastic substances. According to P. O. Morawitz,[2] the thrombin exists in living blood in an inactive state called prothrombin, which becomes converted into thrombin by the simultaneous action on it of soluble calcium salts, and of a thromboplastic substance furnished by the tissue cells in general and by the cellular elements of the blood-platelets and leucocytes. This substance acts, therefore, as a kinase and is called thrombokinase. The fundamental fact of this theory is that kinase is necessary for the union of calcium with prothrombin, but W. H. Howell[3] declares that prothrombin may be converted into thrombin by the action of calcium alone. Prothrombin is probably derived from the blood-platelets or from the leucocytes, and thrombokinase is produced either by the blood-platelets, leucocytes, the vessel wall, or from the tissues. According to Mellanby, the testis is a suitable source to obtain it for experimental purposes. Loucks[4] believes that thrombin loses its activity when deprived of calcium salts, and that active thrombin cannot be prepared from calcium-free serum or fibrin. G. H. Whipple[5] regards the delay in clotting of the blood in diseases of the liver with jaundice as due to an excess of antithrombin in the blood, but Howell suggests that the prothrombin may be rendered inactive by an excess of heparin. Heparin, which is derived from the liver and other organs, acts by neutralising prothrombin and so preventing coagulation. Cephalin is antagonistic to heparin and antithrombin. Such in brief is the present view of the mechanism of clotting. In the living body a thrombus begins by the deposition on the wall of the vein of a minute pearly translucent mass of blood-platelets. The platelets are clustered together forming an irregular sticky substance, catching the passing leucocytes, and they, and perhaps the platelets, appear to liberate thromboplastic material so that filaments of fibrin spread out and entangle numbers of red cells. The thrombus tends to grow by accretion, so that parts of it show differences in colour. The clinical bearing of these facts is the subject of Dr. Bain's observations.

[1] Thrombosis by W. H. Welch, revised by H. D. Rolleston. Vol. vi., pp. 691–762.
[2] Quoted by D. Riesman, Med. Clin. of N. Amer., 1921, iv., 1006.
[3] Amer. Journ. of Physiol., 1910, xxvi., 453.
[4] Ibid., 1926, lxxvi., 186.
[5] MacCallum's Pathology, 3rd ed., 1924, p. 8.

DRUG-TAKING IN SOUTH AMERICA.

THE war is held responsible for the increase in drug-taking during the last 10 years even in countries that remained neutral. The increase was indeed noticeable before 1914, but that it received a great impetus from the abnormal psychological conditions engendered by the war, even in remote countries such as the Argentine, is argued by Dr. Gregorio Bermann,[6] professor of medicine in Cordoba. He states that in Cordoba, a town of 200,000 inhabitants, as also in Buenos Aires, the evil is rampant and widespread among the upper classes. It has become a fashionable vice, widely diffused by the "patotas" or social clubs, which has been calculated to affect in these towns two and a half to three per thousand of the population. The effect of severe legislation was, in Cordoba at least, largely rendered nugatory by the high position of the offenders whose relations used their influence on the judiciary to avoid scandals. Nevertheless, in Dr. Bermann's opinion, there has recently been a considerable diminution; the open trafficking and solicitation no longer exists, though still prevalent enough in the under-world of prostitution and debauchery where this vice finds its natural habitat. As to whether the individual affected is to be regarded as a criminal or an invalid, Dr. Bermann takes up a rational position midway between the two extremes; he is wholly opposed to the elimination of moral responsibility in these cases, whilst admitting that the confirmed drug-taker has to be treated as a sick person. He discusses at length the origin, associations, symptoms (physical and moral), and the consequences of the various drug addictions, special attention being given to the abnormal mental states produced by them, and the medico-legal problems which arise. His own experience seems to have been largely with cocaine, which he regards as the typical vice of rich decadents and closely connected with prostitution and alcoholism; but all the various phases of drug addiction are illustrated by numerous interesting cases drawn from the author's own practice. As remedial measures he advocates the international limitation of the cultivation and manufacture of opium and coca, and as national measures the following: (1) The institution of "ambulatorios," presumably out-patient clinics for the assistance of neuropaths. (2) Combined action on the part of the authorities and the League of Mental Hygiene against alcohol and other drugs. (3) Education of the professional classes concerned. (4) A strict watch over contraband. He would make the unwarranted keeping of such drugs illegal and close offending pharmacies. Lastly he would provide an asylum colony

[6] Toxicomanias. By Dr. Gregorio Bermann, Professor of the Faculty of Medicine. Buenos Aires and Cordoba: Pedro Garcia. Pp. 377.

for habitual drug-takers and deprive them of civil rights. Dr. Bermann interpolates a few notes on drug-taking in the United States, where he estimates it to be at least three times as prevalent as in Cordoba.

The worst period seems to have been about 1919–20, when its prevalence in the United States led the authorities in two or three States to set up special hospitals and special administrations to deal with it. In common with some American writers, he does not consider that prohibition was the cause of so much increase in the United States as many believe. No Englishman can read the strictures passed on this country by the author (pp. 44–5, 338–9) without pain and a feeling that it is impossible morally to justify the policy pursued by England as regards the opium traffic in China, India, and Burmah for the last century. It would be difficult to persuade even an unprejudiced foreigner that in this matter the claims of morality and health had not been subordinated to those of revenue, but we may at least be thankful that this year, 1927, will see the beginning of the end of opium trading in India and that in ten years' time the Government production of opium, except for purely medical purposes, will have ceased entirely. Dr. Bermann is perfectly correct in stating that the primary factor in the suppression of the evil is the control of the original sources of production. Once produced, all the energies of perverted human nature are called in to effect its distribution.

HANDLING OF WOUNDED IN AMPHIBIOUS WARFARE.

IN the *Military Surgeon* for March two United States medical officers, one from the Navy, one from the Army, discuss the Medical Tactics of Joint Army and Navy Operations, in relation particularly to an opposed landing on a hostile coast, the landing at Gallipoli being their special text. They point out that an army cannot itself deal properly with the casualties incurred in landing operations until its hospitals are landed, and that will not be until the landing force has made some headway. Meantime the wounded must be sent back to the transports which have been prepared for them. This preparation involves close touch between the commander-in-chief and his senior medical officer, who must not be misled by hopeful forecasts as to the probable number of wounded, for there may well be 50 per cent. When troops are first landing, only the regimental medical personnel will be wanted ashore; when some advance has been made, field ambulances without transport will be the next need, then casualty clearing stations after them; last of all base hospitals, whose stores and staff may meanwhile be utilised afloat for the early care of the wounded brought back to the transports. Landings may take place at several beaches, and transports appropriate to each will be preparing to be hospitals as soon as they have discharged their troops. Casualties will be brought back in boats that have landed troops, provided (it is added hopefully) the landing of troops is not thus delayed. A naval medical officer, as embarkation officer for wounded, will be on the staff of each naval beachmaster; he will know what transports are available to take what casualties (one detailed for gas cases, one for walking wounded not to be evacuated, and so on), and there will be another naval medical officer with the military officer commanding the landing to give to these naval medical embarkation officers what further or temporary orders become necessary. Meantime the military medical officers who can at the moment be spared (as above) will have been assigned to the transports denoted, with orderlies and stores as required. It is thought by the writers that casualties thus embarked in transports will for the future come officially under the Navy until disembarked, though the Army will give all possible help. The scheme of which this is a very brief summary is worked out in minute detail, and will afford material for important discussion. A semi-official note at the end of the article expresses certain views of the U.S. Army Medical Department, supposed to be in some degree at variance with those of the sea service. That army envisages two sorts of hospital ship: one to be used exclusively for treatment of the sick, reported to Geneva by name, painted white and green, carrying the Red Cross, and enjoying immunity from attack or capture; the other known as the hospital carriers or ambulance transports, which may be equally privileged if reported before a war, but which claims immunity only while employed in transporting patients. Alternatively, these ships might become immune by transporting exclusively medical personnel and stores on the outward voyage.

E.107.

AT a recent meeting of the Berlin Medical Association, described in the *Manchester Guardian* for March 25th, clinical reports were presented on the action of a new anæsthetic which has been invented by chemists of the German Dyestuffs Federation. This compound, whose nature is not divulged, is called E.107, and has been tried by seven independent observers in some hundreds of cases. A small quantity is passed into the rectum in a clyster while the patient remains in bed in the ward, and within seven or eight minutes he is ready for operation; he is sufficiently relaxed, breathing is as quiet as in sleep, and the induction has been acomplished without causing nervousness, struggling, or undesirable reflex actions. According to the reported claims, recovery from the effects of administration is unattended by vomiting or any untoward symptom, and the new anæsthetic is regarded as suitable both for the old and feeble; it has been tried successfully for the production of twilight sleep. Were nothing else recorded, it might appear that E.107 is an almost ideal means of producing anæsthesia, but unfortunately it caused in some patients a certain amount of intestinal irritation, whilst in others cyanosis supervened and artificial respiration became necessary. Prof. Unger, however, in his whole series of 300 cases, is said to have noted no irritation of the intestine, a fact which he attributes to having made sure that the samples of the drug had not deteriorated before they were given. And it is suggested that respiratory depression only occurs in a certain type of patient. From the accounts given in English newspapers it is not clear what type this may be, but the German observers are quoted as saying that it may be detected before induction of anæsthesia, so that no one need be given E.107 who is likely to react to it badly. Bearing in mind the natural tendency to exaggerate the advantages of a new preparation, it nevertheless seems likely that the drug will be useful. The uncertainty of absorption from the intestine must be reckoned with, and it has to be remembered that no injection—whether into skin, muscle, vein, or intestine—can give the anæsthetist the constant control of dosage which is possible when administration is by way of the lung. A larger margin of safety is therefore required for drugs not given by the respiratory tract. Given such a margin, however, it is an advantage to avoid the bronchial tubes and alveoli because the chance of post-operative pneumonia is thereby lessened.

CANCER OF THE CERVIX IN PREGNANCY.

IN a paper read before the Medical Society of the District of Columbia, Dr. Joseph T. Mundell,[1] of Washington, quoted the following statistics to show that carcinoma of the cervix is rarely seen in association with pregnancy. Sawey in 1899 estimated its occurrence as once in every 2000 pregnancies. B. C. Hirst in 1923, as the result of a questionaire sent to a number of obstetricians in the United States, found that in a total of 299,621 pregnancies there were 24 cases of cancer of the cervix, or 1 in every 12,484 pregnancies. The highest and lowest ratios were as

[1] American Journal of Obstetrics and Gynecology, January, 1927.

follows: Asa B. Davis reported 137,966 pregnancies with five cases of cancer, or 1 in 27,599, while Mussey of the Mayo Clinic reported eight cases among 3500 pregnancies in the course of 13 years, or 1 in 437. In most instances cancer preceded pregnancy, but in a few it developed during pregnancy. The differentiation, however, was without practical significance. Opinions are divided as to what effect pregnancy has upon cancer. While some authorities maintain that the increase in the blood and lymphatic supply associated with pregnancy tends to favour the growth of cancer, others claim that the great increase in the connective tissue of the pregnant uterus acts as a barrier to malignant aggression. On the whole the trend of opinion amongst recent observers seems to be that pregnancy has a tendency to retard the growth of cancer. It is generally accepted, however, that after the termination of pregnancy the growth of cancer is very rapid. As regards treatment an early operable case of cancer of the cervix complicating pregnancy in the third month calls for immediate hysterectomy. In more advanced cases this operation is futile. Treatment with radium endangers the fœtus, for although many cases are on record in which it has been used during pregnancy without deleterious effects, it has, nevertheless, been shown repeatedly that radium may do harm both to experimental animals and to the human subject. Perhaps, therefore, the most satisfactory treatment to adopt in advanced cases is cauterisation of the cervix. Dr. Mundell records the case of a well-developed woman, aged 25, whom he treated for rapidly growing cancer of the cervix by applications of radium. He was unaware that she was pregnant and had attributed the increased size of the uterus to the advancing growth of the cancer. After six applications of radium a three months' fœtus was expelled, and the woman died seven months afterwards.

SYNTHETIC THYROXIN.

IT is significant that the two awards made at the annual general meeting of the Chemical Society on March 24th should have been to workers on the constitution of natural products of therapeutic interest. Prof. R. Robinson's work on alkaloids earned for him the Longstaff Medal, whilst the Harrison award went to C. R. Harington for brilliant and rapidly executed research on the active principle of the thyroid gland. Kendall, working in the United States, had expressed the view that thyroxin contained the 4 : 5 : 6 tri-iodo 2 : 4 : 5 : 6 tetrahydroindol nucleus and gave an empirical formula $C_{11}H_{10}O_3NI_3$. Harington, believing the properties of thyroxin were more satisfactorily accounted for by ascribing to it a different structure, synthesised 3′ : 4′ : 5′ tri-iodo phenylpyrrolidine carboxylic acid, with the disappointing result that the product had not the physiological properties of thyroxin.[1] By attacking the natural substance itself he managed to obtain a 0·12 per cent. yield from the thyroid, many times greater than Kendall had obtained, and found that the empirical formula was $C_{15}H_{11}O_4NI_4$. The percentage composition of this substance is not very different from that proper to Kendall's formula which was based on rather slender evidence. That Harington's own formula was correct was shown by a study of the constitution of the substance which he found to be an iodine derivative of the parahydroxyphenyl-ether of tyrosine. Harington proceeded to deiodise the natural principle and show its identity with this tyrosine derivative. Finally and very recently a reasoned series of reactions based on the constitution of known natural iodo-derivatives of tyrosine led to the synthesis of β-[3 : 5 di-iodo-4 (3′ : 5′ di-iodo 4′ hydroxyphenoxy) phenyl] α amino-propionic acid which is indistinguishable chemically and physiologically from natural thyroxin.[2] Thyroxin contains about 65 per cent. of iodine, a fact so outstanding that as recently as 1918 the late Sir William Bayliss wrote: "The most interesting fact, chemically, with regard to the thyroid is the high content in iodine, which appears to be present in a complex organic iodine compound united with a protein. That this is the active principle is shown by the fact that the effect of thyroid substance, which is active even when taken by the mouth, is in proportion to its iodine content."

It is highly creditable that a British bio-chemist should have so advanced our knowledge of this important substance. While it is unlikely that either natural or synthetic thyroxin will ever become a very cheap drug, the fact that an active artificial product can be prepared ensures the supply, in any desired quantity, of a substance of definite activity. An achievement of this kind is of more value to humanity than the discovery of even the most beautiful of new dyes, but it must not be forgotten that it is only the profound knowledge of the possibilities of complex molecule-building and molecule-analysis which have been developed by "juggling with benzene rings" and other organic complexes that has developed the extraordinary chemical insight and technique that makes the synthesis of such bodies as thyroxin possible.

[1] Biochem. Jour., 1926, xx., 293–299, 300–313.
[2] Ibid., 1927, xxi., 169–181, 181–183.

THE STORY OF THE RED CROSS.

MANY people charitably inclined and anxious to be of service to their fellows, either by deed or alms, have the most hazy ideas as to what the Red Cross Society is and what it does. These will find the necessary enlightenment in Sir James Magill's very readable account of the development of the Society.[1] The practical founder of the Society was Mr. Henri Dunant, a Swiss gentleman who happened to be present in a private capacity at the Battle of Solferino in June, 1859, when French and Italians attacked Austrians who held a very strong position. Three hundred thousand men were engaged and the mass of wounded was so great that the existing medical services were totally inadequate to deal with them. In 1862 Mr. Dunant published a book called "Un Souvenir de Solferino," the outcome of which was an International Conference held at Geneva. From this Conference sprang the Geneva Convention of 1864, which laid down the lines of treatment of the sick and wounded in war and of persons attending them—i.e., they were to be considered neutrals—that are followed to-day. How the Society grew in these islands, and how branches were founded throughout the world is detailed by Sir James Magill. The British Red Cross Society obtained a charter under King Edward VII. in 1908. A long and most interesting account of its activities and those of the Red Cross organisations of the Dominions, Colonies, Allies, and Neutral Powers during the Great War is given in Chapter IV., and it is worthy of note that in October, 1914, it was decided that the British Red Cross Society and the Order of St. John of Jerusalem should pool their resources and enter upon a working agreement with a view to economy and efficiency "during the existing war and thereafter if the circumstances permit and require it." In 1923 the Central Joint V.A.D. Council issued a new scheme for V.A.D.'s, and certain details for this were laid down in Paragraph 17 of the General Regulations (July, 1925); but it is too soon at present to form any trustworthy estimate of how the scheme is working. Sir James Magill's book should be read by everyone interested in the work of the Red Cross and its efforts on behalf of all sections of the community in need of its ministration.

THE report for 1925 on the Health of the Army reaches us less than 15 months after the close of the period to which it relates, which is evidence that

[1] The Red Cross. The Idea and its Development. By Sir James Magill, K.C.B., M.A., M.D., Hon. Organising Secretary British Red Cross Society. London: Cassell and Co. 1926. Pp. 144. 5s.

post-war delay is being overcome. The officers' death-rate increased from 3·93 (in the previous year) to 4·44 per 1000, that from injuries dropped from 1·85 to 1·42, but that from "diseases of the digestive system, except liver and tonsillitis" rose from 0·39 to 0·91. The death-rate of other ranks was 2·35 (previous year 2·80); from injuries 0·62 (0·90), from pneumonia 0·33 in both years, from digestive diseases 0·25 (0·21), and from influenza only 0·02 (0·09). The striking feature of the year is the increase in gastric and duodenal ulcer recently noticed; last year there were 25 and 29 cases, but this year 41 and 53. Appendicitis is also on the increase. We shall return to the consideration of this Report.

THE HARVEY MEMORIAL AT HEMPSTEAD CHURCH.

TWO years ago the Royal College of Physicians of London took the initiative in an appeal for the rebuilding of the tower of Hempstead Church, Essex, where lies the body of William Harvey. A marble sarcophagus had been provided by the College in 1883 just after the old battlemented tower with its fire bells had fallen to the ground, and the appeal was directed to medical men of all nations to erect a tangible memorial of one of the great men of their profession. The probable cost was estimated at £5000, of which about one-tenth had already been contributed locally.

At a meeting of the Committee of the Restoration Fund held at the College on March 9th, the following report was received:—

Receipts.

	£	s.	d.
Donations received	431	10	6
Interest on Investments, &c.	32	2	8
	£463	13	2

Expenditure.

Expenses of Appeal	59	14	10
Purchase of £360 5 per cent. War Stock ..	363	6	9
Balance in hand and at Bank	41	1	7
	£463	13	2

This is in addition to the sum of £515 collected locally previous to the appeal, and invested in 5 per cent. War Stock. It was resolved to keep the fund open in the hope of receiving sufficient further support to commence the rebuilding of the tower. Subscriptions may be sent to Dr. Sidney Phillips, Joint Hon. Sec. of the Fund, Royal College of Physicians of London, Pall Mall East, S.W.1.

A SCHEME OF DISTRICT NURSING.—At the College of Nursing on March 24th a number of district nurses met the Directors of the Mutual Property Insurance Company, Ltd., to discuss the nursing service recently organised by the company. Miss Dorsey, R.N., of the Nursing Division, League of Red Cross Societies, briefly described from the chair her experience when coöperating with the Metropolitan Life Insurance Company of New York. In 17 years the nursing service of this Company paid more than 27,000,000 visits, 3,000,000 in 1926; during this time the mortality-rate of the population fell by one-half, and that of typhoid by 82 per cent. Miss Dorsey urged district nursing associations to coöperate with the M.P. Insurance Company. Dr. J. A. H. Brincker spoke of the new arrangement between public health authorities and the Metropolitan Asylums Board, whereby, in a measles epidemic, preference in admission to hospital would be given to severe measles over mild scarlet fever, and thus a new field for service would be opened to the district nurse. In the ensuing discussion an almost unanimous desire was expressed for the development of public health nursing in this country on general rather than on special lines. Miss Wilmshurst, S.R.N., superintendent of the Metropolitan District Nursing Association, spoke of the preventive side of district nursing and the opportunities it affords for health teaching in the home.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCXVII.—THE TREATMENT OF CHRONIC APPENDICITIS.

THE term "chronic appenditicis" in its widest sense includes all those cases which are not acute, and therefore includes the interval appendix. In cases which have been tided over an acute attack by means of expectant treatment, the appendix should be removed after infection has subsided and before recurrence is likely. Commonly the time selected is about three months after convalescence from the acute attack; a longer interval subjects the patient to the risk of another acute attack, especially in young patients. It is estimated that 80 per cent. of patients of all ages relapse within two years after an initial attack of acute appendicitis without appendicectomy. In these cases a definite diagnosis has presumably been made, and therefore, unless any other lesion is suspected, a gridiron incision gives suitable exposure. As a rule surprisingly little pathological change is found in an appendix which was known to have been acutely inflamed or even the cause of an abscess a few months previously. A few limited adhesions, a stricture or a fibrotic tip are commonly the only legacies of the acute attack.

Chronic appendicitis may present as one of two more or less definite clinical entities—i.e., the intermittent, and the chronic dyspeptic type.

The Intermittent Type.

The intermittent type is characterised by recurrent attacks of pain, sometimes colicky in nature, which originate in the neighbourhood of the epigastrium or umbilicus, and are later referred to the appendicular region. Vomiting may occur, but is not a marked feature. After an interval varying from a few hours to a few days the symptoms abate, leaving a temporary local soreness in their wake. On examination some deep tenderness can usually be elicited in the lower right quadrant, and occasionally a thickened or concretion-containing appendix can be palpated through a thin abdominal wall.

On removal the appendix is found to contain a concretion or possess a stricture, the symptoms presumably being due to spasmodic efforts of the organ to overcome the resultant obstruction.

The Dyspeptic Type.

The dyspeptic type of chronic appendicitis is less definite in its symptomatology, and may mimic almost any chronic abdominal condition. Generalised abdominal discomfort is more or less constant and may be aggravated by exercise. Hæmatemesis and even melæna may occur, but the periodic remissions of symptoms so characteristic of gastric or duodenal ulcer are not marked. Symptoms are not relieved by recumbency or pregnancy, which fact may assist in the differential diagnosis of visceroptosis. Neurosis is a commonly associated condition, being partly due to prolonged ill-health, and sometimes aggravated by injudicious treatment. The discomfort associated with renal conditions is usually limited to the side of the lesion, whereas, although the tenderness of chronic appendicitis is commonly localised to the right iliac fossa, the actual pain is referred more centrally. Suspicions of pelvic disease may be aroused by the history of the case, pain is commonly referred to the lower part of the back, and routine examination usually reveals the cause of the trouble.

On removal this type of appendix may show generalised or local fibrosis, especially of the tip. In other cases the organ may be transformed into a mucocele, or even an empyema.

Differential Diagnosis.

The various conditions which must be borne in mind in the differential diagnosis of chronic appendicitis may be summarised as follows :—

Thorax.—Prodromal dyspepsia of phthisis.

Upper abdomen.—Gastric and duodenal ulcers, gall-stones, chronic pancreatitis.

Central abdomen.—Visceroptosis, tuberculous or chronic simple adenitis, colitis.

Pelvis.—Pyosalpinx.

Genito-urinary.—Renal calculus, chronic pyelitis.

Central nervous system.—Neurasthenia.

It will be seen from this summary how many are the pitfalls waiting to entrap the unwary. The public, and even some practitioners, think that chronic disease of the appendix can be diagnosed with certainty by a single abdominal palpation, but in fact it is not easy to decide whether or not the condition is present. Even when symptoms continue after removal of an apparently normal appendix they are sometimes ascribed to "adhesions," until the real cause of the trouble is discovered or manifests itself later.

Exhaustive examinations and repeated observations are usually necessary, particularly with the dyspeptic type, and even then a tentative diagnosis may only be made by a process of exclusion. The mimicry of chronic gastric ulcer by a diseased appendix has been referred to above, and may even be carried to the length of hyperacidity and hypertonicity. If the organ is diseased, removal will probably relieve the symptoms and may restore physiological balance—i.e., the hyperacidity and hypertonicity associated with appendicular gastralgia may disappear. Similarly, persistent colitis may be maintained by a diseased appendix, and if definite symptoms and disability are present, then laparotomy may be justifiable in order to ascertain the condition of the appendix, and to estimate its influence on other abdominal organs.

Much has been written regarding the value of barium meals or enemata in the diagnosis of chronic appendicitis. Distortion or kinking of the appendix, retention of barium after the emptying of the cæcum, and tenderness on palpation have all been mooted as diagnostic of pathological changes. However, much must depend on chance as to whether opaque media enter the appendix, or, having entered, how long the medium will be retained. Moreover, palpation of any appendix which is distended will naturally elicit tenderness. In the experience of most surgeons, radiography is of little value in the diagnosis of chronic appendicitis.

Conservative Treatment.

Having considered the differential diagnosis from other surgical conditions, consideration should be given to teeth, diet, mode and habits of life, particularly with regard to smoking, overwork and lack of exercise. Conservative lines should especially be considered in connexion with neurasthenics and elderly patients, especially females.

Operative Measures.

If improvement is unsatisfactory then operation is seriously considered, particularly under the following circumstances :—

1. Recurrent cases, especially if colic is well marked as the diagnosis is then usually correct.

2. In children, as prolonged dietetic treatment and restriction of activities are obviously unsuitable. Also the neurotic element can usually be excluded, and the risk of acute exacerbations is greater than in adults.

3. When the appendix, if diseased, may be exerting a malign influence on other abdominal organs—e.g., stomach, colon. If in the absence of physical signs, symptomatic treatment does not relieve the patient and no marked neurotic element is present, then the condition of the appendix should be verified.

4. In a few cases, if a family predisposition to acute appendicitis exists, appendicular symptoms may justify appendicectomy, both from the risk of an acute attack, and to relieve the patient of a natural dread of a sudden dangerous illness.

In considering the treatment of chronic appendicitis, appendicectomy is, of course, indicated in all genuine cases.

If, in the event of an error of diagnosis, some other condition is present which is amenable to surgical treatment and may be dealt with through the laparotomy wound, little harm is done, but good exposure must be obtained in order that other lesions may be readily recognised.

With regard to the means of approach, the gridiron incision provides adequate exposure if no other pathological lesion is present. However, complete exposure is impossible through this incision, and the upper abdomen and pelvis are out of reach for surgical procedures. The surgeon who explores the pelvis by means of one finger inserted through a gridiron incision merits, and often obtains, the derision of the gynæcologist.

Battle's incision, which consists in inward displacement of the rectus muscle has nothing to commend it. If prolongation of the incision is necessary, intercostal nerves are seriously jeopardised, and in any case they are likely to be crushed if the vessels which accompany them are injured. Injury to these nerves results in risk of subsequent ventral or inguinal herniæ. Therefore in chronic cases the most suitable incision is undoubtedly the right paramedial, as laparotomy for chronic appendicitis is probably the opportunity of a lifetime to explore the whole abdomen, and it is universally accepted that chronic appendicitis is frequently associated with, and possibly the cause of, such conditions as gastric or duodenal ulceration and gall-stones.

The incision commences at the level of the umbilicus, one inch from midline, and extends downwards for about four inches. The anterior sheath of the rectus muscle is divided and separated inwards until the inner border is exposed. The muscle is then retracted outwards and the posterior sheath of the peritoneum divided, the deep epigastric vessels being ligatured if necessary. The cæcum is withdrawn and the appendix removed. Systematic examination is then made of the abdominal contents, particularly the stomach and duodenum, biliary apparatus and the pelvis. Should other conditions be present which are amenable to surgical treatment, the incision may be prolonged in either direction as far as necessary, the rectus and its nerve supply being safely displaced outwards.

In conclusion, mention must be made of the so-called carcinoma, or the cancroid appendix. The condition occurs most commonly in young adults, and is uncommon, only two cases occurring in 750 consecutive appendicectomies by the writer. It is usually revealed by acute infection superimposed on the chronic condition. On removal the appendix is markedly thickened and may be one inch in diameter. Microscopically the condition is one of spheroidal-celled carcinoma. The condition is relatively innocent, secondary deposits being recorded in only 12 per cent. of cases.

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MIDDLESEX HOSPITAL. — The most important announcement made at the annual meeting, over which Prince Arthur of Connaught presided, was that £160,000 had been given anonymously for the building of a nurses' hostel on a site adjoining the hospital. At present the nurses are housed in five separate buildings. The gift will provide for the first section of the hostel, with about 180 bedrooms, together with refectory and recreation accommodation for the full personnel, ultimately to be lodged in it. It is expected that the rebuilding of the west wing of the hospital will be begun by midsummer.

Special Articles.

BOVINE TUBERCULOSIS AND THE TUBERCULOSIS ORDER, 1925.

BY WILLIAM G. SAVAGE, B.Sc., M.D. LOND.,
MEDICAL OFFICER OF HEALTH FOR THE COUNTY OF SOMERSET.

THE evidence is conclusive that a material proportion of human tuberculosis is of bovine origin, due to the consumption of cows' milk containing living tubercle bacilli. Any measures in force for controlling and diminishing the amount of bovine tuberculosis must therefore be of interest and practical concern to those engaged in public health. The Tuberculosis Order has been advocated and recommended, not only as a valuable agent for the diminution of bovine tuberculosis, but also as an important means of reducing the dangers from tuberculous milk. It is necessary to study with care the actual working of this Order, and to try to ascertain how far it is likely to reduce the danger of milk acting as a vehicle for the conveyance of tuberculosis. With this object I have made a careful study of its working in a very large dairy county for the 16 months of its operation to the end of 1926. I have no reason to believe that the procedure in this county differs in any essentials from the practice all over England, while in many ways its administration must be regarded as on a high level, as regards the care with which different requirements are carried out.

The Theoretical Aims of the Order.

It is admittedly impracticable to slaughter all cattle suffering from tuberculosis. The Order does aim, however, at reducing infection and so diminishing the amount of tuberculosis. It is a development of the method advocated by Prof. Ostertag, of Berlin, of the elimination of all "open" cases of tuberculosis from dairy herds. In his method this was attained by periodical examinations of the herds by veterinary inspectors, together with bacteriological examination of the mixed milk. If tubercle bacilli are found in the milk, or if suspicious animals are clinically detected, veterinary and bacteriological examinations are again made of these animals. The animals with "open" tuberculosis are slaughtered, while the premises are thoroughly disinfected. This complete plan is not followed, but in the words of the circular of the Board of Agriculture—

"The Order aims at the destruction of every cow suffering from tuberculosis of the udder or giving tuberculous milk and every bovine animal suffering from tuberculous emaciation or suffering from a chronic cough and showing definite clinical signs of tuberculosis."

Three types of tuberculosis are scheduled, i.e.—

(1) Any cow which is, or appears to be, suffering from tuberculosis of the udder, indurated udder, or other chronic disease of the udder.

(2) Any bovine animal which is, or appears to be, suffering from tuberculous emaciation.

(3) Any bovine animal which is suffering from a chronic cough and showing definite clinical signs of tuberculosis.

These three types may conveniently be called the designated types of tuberculosis. The knowledge of these animals administratively is obtained from two sources, i.e.—

(1) Every person in charge of an animal which may be suffering from one of the designated types of tuberculosis has, without unavoidable delay, to give information of the fact to a police-constable or to an inspector of the local authority.

(2) A veterinary surgeon who, in his private practice, comes across such an animal has to notify it to an inspector of the local authority.

The Order provides for examination of these notified animals by a veterinary inspector appointed by the local authority, for their slaughter if considered to be in one of the three designated groups, with compensation to the owner according to a definite scale. The local authority referred to is the local authority under the Diseases of Animals Act, 1894.

To estimate the efficiency of the Order as an agency to reduce bovine tuberculosis, certain points are obviously of fundamental importance.

The Stage at which the Three Specified Classes of Tuberculous Animals are Notified and Destroyed.

These cases of advanced tuberculosis are a great danger to the rest of the herd, since they eliminate tubercle bacilli in their expectoration and in their fæces. Ostertag's procedure has a definite scientific aim—i.e., to detect these animals by the aid of bacteriology and veterinary examinations within a short time of their becoming "open" cases. The Tuberculosis Order does not make use of these aids, but relies on a system of notification by owners and veterinary surgeons. In this country it is not the practice of farmers and breeders to have systematic veterinary inspection of their bovines, but only to call in a veterinary surgeon when an animal is definitely ill. Only a small proportion of animals in the designated classes are likely therefore to be notified in this way. Of the 798 animals dealt with to the end of 1926, only 172 were reported by veterinary surgeons, and this number includes those found when inspecting herds containing a notified animal, while 612 were reported by owners, the remaining 14 being otherwise reported. In practice the onus of reporting these designated animals is mainly thrown upon the owners. The average farmer is very ill-informed in regard to tuberculosis, which cases are dangerous, and how it is spread. Tuberculosis of the udder is difficult to diagnose except when advanced. The owner has not to report emaciation, but only an animal which "appears to be suffering from *tuberculous* emaciation"; he has not to report a chronic cough, but only an animal which is "suffering from a chronic cough *and* showing definite clinical signs of tuberculosis." He is under no obligation to call in veterinary assistance if he suspects, and obviously he can postpone notification until any animal is of no further use to him without the slightest risk of incurring any penalty.

Theoretical considerations suggest, therefore, that the bulk of the animals are only likely to be reported after the condition has existed for a long time, and after the animal has been an active spreader of infection. This is amply substantiated when an analysis is made of the returns.

The 798 cases were as follows:—

Classed as "advanced" tuberculosis	496
" " "not advanced" "	284
" " udder tuberculosis (entirely or mainly) ..	13
No tuberculosis at post-mortem	5

A number of the "advanced" and "not advanced" groups showed udder lesions, and this point is dealt with below, in addition to other lesions of tuberculosis.

Section 9 (4) of the Order defines the conditions to be included as "advanced" tuberculosis. It must be noted that "not advanced" under this Order does not mean what it would do in a medical diagnosis. An animal can have extensive and old-standing lesions and still be classed as "not advanced." The following are examples of post-mortem records of cases classified as "not advanced":—

Tuberculosis of the lungs, pharyngeal, mediastinal, and mesenteric glands.
" " mesenteric glands, intestines, and several joints.
" " both lungs and miliary tuberculosis of the liver.
" " the intestines and of the bronchial glands.
" " the lungs, pleura, and mesenteric glands.

It is evident that a good many of the cases included in my summary as "not advanced" belong to the advanced group, and if correctly placed would have sent still higher the percentage of advanced. It is perfectly clear from the above figures and a study of the post-mortem returns that a preponderating proportion of the cases are old long-standing cases, most of which have been excreting tubercle bacilli for a long time before their slaughter under the Order. A single example may be quoted, and it refers to an animal killed December, 1926—

i.e., after the Order had been in operation for nearly 16 months. The post-mortem record reads:—

"Generalised tuberculosis: tuberculosis of liver, kidney, pleura, intestines, miliary tuberculosis of both lungs, submaxillary, parotid, pulmonary, bronchial and hepatic glands tuberculous. No tuberculosis of the udder."

The Extent to which the other Animals are Examined in a Herd found to contain a Positive Notified Case of Open Tuberculosis.

The Ministry of Agriculture and Fisheries emphasise the importance of this in Circular Letter No. 13 (July, 1925), and point out:—

"Where the report has been received in respect of a particular animal the examination conducted by the veterinary inspector should not be confined to the animal which was the subject of the report, but should be extended to other bovine animals on the premises, and particularly to all milch cows, and the veterinary inspector should make an exhaustive clinical examination of any animal which there is reason to suspect of suffering from tuberculosis of the udder, from tuberculous emaciation, or of giving tuberculous milk."

Such an investigation is obviously of great importance from the preventive standpoint. There are three different attitudes. One is the wording of the Order itself which is non-committal and leaves it entirely to the veterinary inspector to examine any other animals on the premises which he "considers it desirable to examine." The second is the wholly admirable urge of the Ministry of Agriculture, quoted above, to investigate the other animals for sources of tuberculous infection. The third attitude is that of the local authorities administering the Order which, so far as I can ascertain, is generally in the direction of strongly discouraging any detailed examinations of the other animals. I have been told by responsible veterinary inspectors in other areas that they have been definitely instructed not to examine the other animals except under special circumstances.

In the county under consideration it is evident that only in a quite small minority of cases are the other animals examined. This is shown by three sets of facts. In the first place, an examination of the actual returns shows that it is quite the exception to examine the other animals, although a place is provided for this information. The records are badly kept as regards this point, so exact statistics cannot be given, but even giving the credit to doubtful cases, the total of herds examined is a very small proportion of the whole. The usual plan seems to be to ask the farmer if he has any doubtful animals, and to look at these, while in some cases the animals are paraded for the inspector, but clearly this is not in any sense an examination.

In the second place the extra fees paid out to veterinary surgeons for these secondary examinations amount to a very small sum during the 16 months, and afford definite evidence of active discouragement.

The third fact is the number of cases in which the examination of the other animals has resulted in the detection of an animal suffering from one of the designated types of tuberculosis. During the whole 16 months only 24 such positive cases were reported. Some of these were after an examination of all the bovines, or at least of all the cows, but in a good many cases they were individual suspected animals brought forward or picked out without an examination of the whole herd. The primary animal causing the veterinary inspector to visit was either an animal suffering from emaciation or chronic cough, none from tuberculosis of the udder. Most were single cases, but three were on one farm, and two were reported from each of two farms—i.e., they were from 20 herds. These 24 animals were:—

8 cases of	advanced tuberculosis	with no mention of udder
7 ,, ,,	not advanced ,,	involvement.
5 ,, ,,	advanced ,,	with definite udder tuberculosis.
4 ,, ,,	udder tuberculosis (alone or mainly).	

It is certain that if more herds had been systematically examined many more affected animals would have been discovered. One example of what happens may be quoted. An emaciated animal was slaughtered, November, 1926, and showed post mortem very advanced tuberculosis, the following being mentioned as tuberculous—both lungs, pleura, peritoneum, liver, spleen, intestines, and mesentery. There were 50 cows and 30 bovines on this farm, yet none were examined although, obviously, this animal must have been actively infectious for a long period.

The Extent to which "Udder" Tuberculosis is being Notified.

The records show that the 798 cases reported were for the following conditions:—

Tuberculous emaciation or chronic cough	= 738
Udder tuberculosis	= 60

The udder notifications were fairly uniformly distributed in time, since the notifications in the four four-monthly periods from Sept. 1st, 1926, to the end of 1926 were respectively 15, 15, 14, 16. There is therefore no evidence that cases are being reported more frequently as the Order becomes better known. The post-mortem findings in these 60 cases were:—

"Advanced" tuberculosis, with udder involvement as part of the general tuberculosis	= 33
Considerable lesions in other organs as well as the udder but classed as "not advanced"	= 9
Udder lesions only reported	= 13
No tuberculosis of the udder	= 5

These findings are of considerable interest. They show only 13 cases of udder tuberculosis alone, while in 42 the udder involvement was merely part of a general tuberculous infection.

While 60 out of 798 cases (7·5 per cent.) seems a fair proportion, other facts have to be considered. In five cases the swollen or indurated udder which led to the primary notification was found *post mortem* not to be due to tuberculosis. Four of these were "advanced" tuberculosis without udder lesions, the fifth animal showed no tuberculosis anywhere. Three cases were not primary notifications under the Order, but were detected by the examination of cows in the notified herd. Three other cases were discovered in connexion with inspections under the Milk and Dairies Act, 1915—i.e., from the examination of herds the milk from which was found to contain tubercle bacilli. They were subsequently dealt with under the Tuberculosis Order as a matter of policy and so become included. They cannot properly be included as notifications made in connexion with the working of the Order. The exclusion of these 11 cases leaves only 49 cases of udder tuberculosis which were reported under the Order. In no less than 33 of these the udder lesions were a more or less accidental concomitant of a state of advanced tuberculosis for which the animals were dealt with. We are left with only 10 cases of primary udder tuberculosis reported as primary notifications under the Order. It cannot be contended from these figures that the Order is doing anything material to eliminate cows suffering from primary udder tuberculosis.

There are some 100,000 cows in the county, and if the proportion of udder tuberculosis is taken as 0·3 per cent. (which is well below the figures of most veterinary authorities) this gives about 300 cows as suffering at any one time from tuberculosis of the udder. This includes primary udder tuberculosis and cases in which udder disease is part of a general tuberculosis. I have examined the post-mortem records of the whole of the 798 animals slaughtered under the Order to the end of 1926. It is probable that udder disease is not investigated in cases with conspicuous lesions elsewhere, but since March, 1926, veterinary inspectors have been specially asked to investigate and record this point. In the later schedules udder disease, positive or negative, is specially mentioned in a material proportion of the cases. The following table shows, therefore, the figures recorded separately for the first six months and the last nine months.

Dealing only with the figures for the last nine months of 1926, they show that out of 451 cases there were 85 cases of udder involvement—i.e., 18·8 per cent.

The animals slaughtered include all bovines, and therefore a proportion are not females. If, however, only the figures with definite information supplied as to the condition of the udder are considered, they show that out of 302 cases there was udder involvement in 85 (28 per cent.). A total of 85 cases of udder disease falls very far short of the estimated number of 300, and it is evident that the majority of cases

Post-mortem findings.	Sept. 1st, 1925, to March 31st, 1926.	Last 9 months of 1926.	Total.
"Advanced"—			
Condition of udder not mentioned	177	113	290
Udder mentioned as not involved	—	109	109
With udder involvement ..	34	63	97
"Not advanced"—			
Condition of udder not mentioned	122	33	155
Udder mentioned as not involved	—	108	108
With udder involvement ..	4	17	21
Udder tuberculous lesions: mainly or only	8	5	13
Animals not tuberculous	2	3	5
—	347	451	798

of udder tuberculosis are not being dealt with under the Order. It must, however, be credited as one satisfactory feature of the Order that during 16 months working 131 cows with definite disease of the udder, the majority of which were supplying milk for human consumption, were destroyed.

The Extent to which Laboratory Facilities are being Utilised to Ascertain if Suspected Animals belong to one of the Designated Types of Tuberculosis.

Laboratory facilities are provided free of cost, the work being done in the county laboratory. An outfit and all information is sent on request. Out of the whole 798 cases laboratory diagnosis is reported as made use of in only 15 instances. Four of these do not properly come under the Order as they were four positive cases detected under the Milk and Dairies Act, 1915, and merely slaughtered under the Order. Excluding these the other cases were:—

In 4 the veterinary surgeon reported he had examined the milk and found tubercle bacilli.

In 1 the veterinary surgeon examined material from a discharging neck gland and found tubercle bacilli.

In 6 cases samples of milk were examined in the county laboratory (5 positive).

These figures show that laboratory diagnosis is hardly being used at all. This is a significant subsidiary proof that it is only advanced cases, easily recognised clinically, which are being dealt with, and that no endeavour is being made to eliminate udder tuberculosis. All experienced veterinary surgeons are aware of the need for bacteriological assistance to diagnose early and doubtful cases of udder tuberculosis. I have investigated, accompanied by a veterinary surgeon, a good many herds, the milk from which has yielded tubercle bacilli. Invariably such herds have contained cows which showed mammary abnormalities which the veterinary surgeon was unable to exclude as not tuberculous without a bacteriological investigation of the milk. It is true most of these have been negative bacteriologically, but the fact illustrates the necessity of bacteriological examinations in doubtful cases. I trace part of this neglect of laboratory assistance to the fact that no conference of veterinary surgeons working the Order was ever held, and that no whole-time veterinary officer was appointed to coördinate the work.

Disinfection of Premises after "Open" Cases of Tuberculosis have been Destroyed.

The requirements of the Order (Section 13) are very vague, and if disinfection at all is to be carried out or how it is to be done is left to the discretion of the police. Although we may not all agree as to the practical utility of disinfection in such cases, the disinfection of cowsheds is a valuable method of bringing home to the cow-keeper the infectious nature of these open cases and the importance of reducing infection. Personally, I think disinfection is itself a valuable preventive measure if adequately carried out. Disinfection is a scientific matter, and disinfection of cowsheds particularly difficult. One is left wondering what part of the training of the police fits them for the exercise of these functions and without expert guidance. In Somerset I have drawn up a simple procedure for disinfection, and the chief constable has issued instructions for disinfection to be carried out along those lines. This, however, is outside the Order, and there is nothing in the Order suggesting obtaining the advice of an expert or indeed suggesting that disinfection should be generally carried out. I fancy an inquiry as to the procedure followed in different areas would be illuminating.

Summary.

Assuming, as I am compelled to do, that the above account of the actual working methods of this Order is in no way peculiar or abnormal, it gives a clear idea of what is being done, and furnishes a basis on which to frame an opinion as to what is likely to be accomplished. No effective steps are being taken to explain to the owners of the cows the real nature of tuberculosis, the economic importance of eliminating it, the preventive possibilities and aims of the Order, the objective signs in cattle to look out for, or to offer veterinary and laboratory help to detect these dangerous animals in the early stages of their gross infectivity. Simple and clearly written instructions as to their responsibilities under the Order are not issued. The great bulk of the animals slaughtered under it are destroyed only after they have been highly infective for a long antecedent period, and after they have had prolonged opportunities to infect the other animals in the herd and the byres. They are slaughtered when much of the harm they are going to do has been done. No effective steps are taken to carry out the printed recommendations of the Board of Agriculture in regard to the detailed examination of the other animals in the herd, even when the slaughtered animals are in an advanced stage of tuberculosis, and suffer from such infective conditions as severe chronic cough or diarrhœa. Such disinfection as is practised is in the hands of the police, and is entirely unsupervised by anyone who knows what disinfection means. The elimination of tuberculosis of the udder is, in the main, neglected, and no effective steps are taken to encourage the use of bacteriological methods of diagnosis. The cost of working the Order is considerable both for compensation and administration, and being without any preventive outlook it is difficult to see what is the gain to the community from this heavy expenditure.

Perhaps a clearer appreciation of the futility of the Order, as it is being worked, will be obtained by imagining our preventive work against human tuberculosis carried out along these lines. No steps would be taken to enlighten householders where there was an advanced case of tuberculosis of the dangers of infection to the other inmates or to explain how the disease is spread. No action would be taken to isolate or remove the advanced case until he or she had been actively infectious for a very long period, possibly a year or more. When nearing his end, the case would be removed from the house (the equivalent of slaughter for cows). No steps would be taken to examine the contacts to see if they had tuberculosis, and no advice would be given in regard to them. The police would then be allowed to disinfect according to the ideas of the chief constable, but no officer experienced in disinfection would be permitted to interfere. Finally, the local authority would pay the householder a sum of money because he had had an advanced case of tuberculosis in his house.

It is not the purpose of this paper to discuss the best way to deal with the very difficult problem of bovine tuberculosis. On the other hand, assuming that the principle of working along the lines of the Tuber-

culosis Order is retained, it is perhaps worth while to indicate certain directions along which, in my opinion, its working might be improved.

Tuberculosis is a cause of enormous financial loss to the farmer, breeder, and butcher. Authorities agree that, quite apart from any question of human infection, it is of the highest benefit to agriculture to eliminate it or at least reduce its ravages. Part of the success of methods for the reduction of human tuberculosis undoubtedly are due to the persistent efforts which have been made to enlighten the public as to its methods of spread and the feasibility and importance of prevention. The same policy is necessary as regards bovine tuberculosis. To throw upon the farmer the duty of detecting and notifying such highly technical conditions as tuberculosis of the udder, tuberculous emaciation, and chronic cough, accompanied by definite clinical signs of tuberculosis without giving him advice or guidance can end in nothing but the notification of animals in a highly advanced condition, and after they have spread much infective material. My figures show that more than three-quarters of the notifications were directly made by the owners. I am aware that agriculturists can obtain excellent leaflets from the Board of Agriculture on many subjects, including tuberculosis, but I am unaware of any systematic educational efforts being carried out along the lines I have indicated.

Such educational efforts cannot teach the owners of herds how to diagnose tuberculosis, and this alone is not enough. They must be made interested and brought to realise that the presence of these "open" cases is a direct menace to the healthiness of their herds, and that it is financially to their advantage to eliminate them as soon as possible. It should be made a duty under the Order to report all animals *suspected* to belong to one of the designated groups. To be effective, this must go hand in hand with the education just mentioned as to the financial advantage of eliminating these animals. The local authority should provide veterinary assistance, free of charge, to ascertain if these suspected animals did come under the Order. As a natural corollary any owner found to have an animal in an advanced stage of tuberculosis which he should have and did not report as a suspected animal would be fined, and no compensation paid for slaughter. This would increase his interest in the problem. The benefit of free veterinary assistance for suspected animals would be of great assistance to owners of herds, and only the neglectful indifferent farmer would be penalised. It would prevent some of the scandals which occur at present of cows being deliberately milked to the bitter end, although clearly in an advanced stage of tuberculosis, and then when no longer of use as milkers, being reported and compensation claimed.

A system of regular veterinary inspection of dairy cows is obviously a much better procedure than the above as a means of reducing tuberculosis, but the cost is prohibitive, if done adequately. As a step towards this goal, and one costing very much less money, is the examination of suspected animals. When a veterinary surgeon is on a farm examining a notified animal it does not take long to examine the other animals, and it should be done as a routine measure. It should not be left to the discretion of the veterinary inspector, since when the local authority paying him his fees discourages such examinations it puts him in a highly invidious position. It should be a duty, and a proper entry should be made on his return giving the number of bovines examined and stating definitely that in his opinion none or which come under the designated groups, and giving particulars of those which are suspicious. In view of the difficulty of the diagnosis of udder tuberculosis in its early stages, there is need to encourage and facilitate a much greater use of bacteriology as an aid. I am decidedly of opinion that these examinations should be carried out by a competent bacteriologist in a properly equipped laboratory.

The whole question of the administration of this Order needs revision. From communications from other county medical officers it is evident that in most counties it is administered by the Agricultural Committee, and without any liaison with the Public Health Committee or its medical officer of health. The general procedure seems to be to carry it out by means of part-time veterinary surgeons and without any controlling expert. There is no expert to attend the committee and advise as to the proper way to work the Order. There is no expert to see that the details of the Order are carried out as they should be. In some places the chief constable seems to be the controlling official. The inevitable result is that its preventive possibilities are overlooked, and the Order is looked upon as something to be worked as economically as possible, and administrative endeavour is tuned to the reduction of the cost of its working. To be of any lasting value the Order must be worked on preventive lines with a preventive outlook, and this means the guidance of an expert in preventive work. To do so means a much greater expenditure in the earlier years, but one which ought to steadily diminish. (I pointed this out in 1913 in connexion with the Tuberculosis Order, 1913.) The present procedure means a heavy expenditure which is not likely to show any material diminution year by year, since I cannot see that any prevention of tuberculosis is likely to result. To spend more money initially and do real preventive work is much sounder economy than to cut down costs to the lowest possible, and as a result waste all the money as regards doing anything to reduce the spread of infection.

Improvements are also necessary on the technical side. For reasons somewhat similar to those which make whole-time medical officers of health more effective and untrammelled than part-time medical officers, whole-time veterinary inspectors to work the Order are to be preferred. Financial considerations do not make this practicable in most counties at the present time. I regard it as essential, however, that each county of any size should have at least one whole-time veterinary surgeon on its staff. He would be the expert official who would advise the Agriculture Committee in regard to the working of the Order, and who would control the work of the part-time men and unify their practices. He would also be able to carry out a number of the examinations himself. Under the Milk and Dairies (Consolidation) Act, 1915, and the Milk and Dairies Order, 1926, the county councils have considerable duties and powers with regard to the inspection and examination of cows, and these would be carried out by this whole-time officer. These powers are worked by the Public Health Committees, and this Officer should be on the staff of the county medical officer of health and under the Public Health Committee. This would ensure that coördination of effort which is so lacking at present, and would help to give the preventive outlook to the working of the Tuberculosis Order, 1925.

Assuming the continuance of the principles of the Tuberculosis Order as the official method of reducing tuberculosis, I submit that unless a radical change of procedure is instituted very little will be accomplished in the way of reducing bovine tuberculosis; indeed, it is likely to do harm, since the money available for tuberculosis prevention and reduction is limited. To drain it away along a channel which has little or no preventive prospects will prevent it being applied in directions where it might be beneficial.

ROENTGEN SOCIETY.—A general meeting of this Society will be held on Tuesday, April 5th, at 8.15 P.M., in the British Institute of Radiology, 32, Welbeck-street, London, W. 1. Dr. J. V. Sparks will read a paper on the Uses of Lipiodol as an Aid to Diagnosis in Diseases of the Chest, and Mr. F. Melville will speak on X Ray Cinematography.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE FIRST REPORT FOR 1926.

Dr. R. J. Moule Horne's report for the Borough of Poole is the first of the 1926 Reports to reach us. The following are some of the statistics for his district: Estimated (R.G.) population, 49,150; birth-rate, 17·5; death-rate per 1000 of the population (all causes), 11·25; tuberculosis, 1·04; cancer, 1·62; respiratory diseases with influenza, 1·5; heart disease, 1·5. Death-rates per 1000 births: neonatal, 30; infantile, 53; maternal from childbirth, 3·5.

Poole, Dr. Horne tells us, is the largest town in Dorset and is rapidly increasing in popularity as an all-the-year round health resort, especially for people who have spent years in the tropics. The enclosed waters of the harbour and the shelter of the Purbeck Hills temper the summer heat and the winter cold and the town escapes the sea-mists of the coast-line. The rapid development threatens the pine-clad areas and "if," he warns his fellow-citizens, "Poole will maintain its pride, it must preserve its pines." The average yearly rainfall is 31 in. and the sunshine 1715 hours. The industries are not unhealthy—e.g., pottery, brick, earthenware, and tile-manufacturing, fishing, &c.—but there is an undesirably large percentage of unskilled labour associated with the docks and quay. The number of the unemployed gradually decreased from 1179 in 1921 to 361 in 1925 but in 1926 there was a set-back to 625.

Poole is well off for parks and open spaces and Alderman H. S. Carter, the present mayor, has just presented a playing field to the borough. The population fluctuates year by year according to the varying influx of mostly elderly residents. The housing shortage does not appear to be acute but at the end of 1926 it was estimated at 484 houses. When the death-rate was corrected for the unusual age constitution of the population, the rate of 11·25 becomes 9·45. The corporation water-works supply a hard chlorinated water from deep wells in the Corfe Hills, but about 6000 of the population are supplied by the Bournemouth Water Company. The rate of building tends to outrun the provision of sewers and roads, and there are 180 more cesspools to be emptied by the health department than was the case five years ago and a further 100 will be added in 1927. In certain weathers access to the houses for this service is impossible owing to the state of the roads. One objectionable refuse tip was closed during the year. The deposit of the refuse is used for reclaiming land in two areas, and Dr. Horne hopes that these areas will be rapidly filled up and a more sanitary method of disposal adopted. The public lime-washing of courts and alleys is said to have a stimulating effect on the adjoining householders.

The open air swimming-bath at Baiter is well used during the summer months and it is proposed to have a second bath in another situation. Figures are given which indicate a decline in the rat population as the result of vigorous measures taken during the last five years. During the summer months the fresh-water lakes and ponds are sprayed with paraffin in order to keep down the mosquitoes. There are 14 private slaughter-houses scattered about the borough and a considerable proportion of the Bournemouth meat-supply is derived therefrom. The new meat regulations have entailed much more work on the sanitary inspectors owing to the butchers having to give three hours' notice of intention to slaughter. Thus instead of about 400 visits to slaughter-houses during the year there were 1460 during 1926. Dr. Horne would much like to see a modern public slaughter-house erected for the borough. Poole oysters were a delicacy relished by the Romans. Nowadays with a population of 200,000 living near the bay and harbour the oysters dredged from the harbour have to be relaid for 14 days in the Arne reach prior to their sale in the open market. During the last season licence was given for the dredging of 600,000 oysters.

The infant mortality report shows that there were 44 stillbirths and 46 deaths of infants, and that the mortality for the one to five age-group is only half of what it was 15 years ago, and has, in fact, during that period improved more than the infant mortality. The number of cases of notified ophthalmia neonatorum has fallen gradually from 21 in 1921 to three in 1926. Full sight was preserved in all, with the exception of one impaired vision in 1921. There are 16 elementary schools with 6275 names on the register. The head of each school was provided during the year with a well-equipped emergency dressing outfit for first-aid. The school dentists inspected 5210 children, of whom 3340 were ascertained to require treatment, and 1677 actually attended the minor ailments clinic and received treatment. The scheme of treatment charges has affected the dental cases more than any other branch. During the last three years the receipts from fees have been £8 12*s.*, £13 3*s.*, and £13 for dental treatment and £33 10*s.*, £33 12*s.* 6*d.* and £34 11*s.* 6*d.* for treatment of all kinds. It is pertinent to ask what was the actual cost of collecting these small totals of fees.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 12TH, 1927.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 442 (last week 412); scarlet fever, 1400; diphtheria, 942; enteric fever, 65; pneumonia, 1580 (last week 2379); puerperal fever, 39; puerperal pyrexia, 129; cerebro-spinal fever, 9; acute poliomyelitis, 9; acute polioencephalitis, 4; encephalitis lethargica, 39; dysentery, 10; ophthalmia neonatorum, 135. No case of cholera, plague or typhus fever was notified during the week.

Deaths.—In the aggregate of great towns including London there were no deaths from small-pox, 4 (0) from enteric fever, 52 (0) from measles, 2 (0) from scarlet fever, 86 (16) from whooping-cough, 30 (10) from diphtheria, 44 (15) from diarrhœa and enteritis under two years, and 342 (33) from influenza.

Small-pox in Scotland.—At the beginning of the week the number of small-pox cases reported in Dundee amounted to 33, and extra accommodation was being arranged for at the small-pox hospital

The Services.

ROYAL NAVAL MEDICAL SERVICES.

Surg.-Lt. C. R. Boland to *Widgeon*.

ROYAL ARMY MEDICAL CORPS.

War Office appointment.—Maj. C. J. Coppinger to be Asst. Dir. of Pathology, vice Lt.-Col. and Bt.-Col. A. E. Hamerton.

Maj. J. H. Robinson to be Temp. Capt., and relinquishes the rank of Maj.

Capt. J. W. Malcolm is restd. to the estabt.

Capt. E. M. Townsend to be Maj. (Prov.).

Henry A. Ferguson to be temp. Lt.

Hygiene Companies.—Capt. J. B. McGovern to comd. the 7th (Southern) Hygiene Co.

MILITIA.

Majs. L. W. O. Taylor and G. F. V. Leary relinquish their commns., and retain the rank of Maj.

Maj. T. Walker relinquishes his commn., and retains the rank of Maj.

ROYAL AIR FORCE.

Flight-Lt. L. C. Palmer-Jones is granted a permanent commission in this rank.

Correspondence.

"Audi alteram partem."

VACCINATION AND ENCEPHALITIS.

To the Editor of THE LANCET.

SIR,—As one who has performed vaccination on well over 22,000 occasions during the last 43 years, I was much interested in reading your article (March 19th, p. 619) on Acute Disease of the Central Nervous System associated with Vaccination. In my early days vaccination was carried out with no aseptic precaution, arm-to-arm vaccine was used, and no dressing was applied—unless by an "experienced neighbour" who advised the application of bacon fat, goose grease, or some other irritating unguent. I saw many bad arms in those days. Later I employed commercial lymph, which proved very irregular in action, sometimes intensive, sometimes abortive. At this stage a dressing of boric lint was applied, and the violent reactions were much diminished. During the last 30 years the operation has been carried out under strict aseptic rules with fresh Government lymph, and the result has been excellent.

I have therefore witnessed vaccination carried out in all its various methods, and I can emphatically state that I have never seen a sequela resembling encephalitis in any of its forms. Encephalitis lethargica is, as the article states, a comparatively new disease; but had such symptoms followed vaccination in the earlier period of the century, I have no hesitation in saying it would have attracted the attention of the dullest practitioner. Bastiaanse gives a clue to the suggested association. He and others state that "during February, March, and April, 1925, about 122,000 persons were vaccinated, and 24 cases of postvaccinal encephalitis occurred"; but during the other nine months of the year 151,000 persons were vaccinated, and only seven cases occurred. Surely this points to a seasonal cause, and has no relation to vaccination? Again Bastiaanse admits that the cases did not conform to the usual type of encephalitis lethargica since the onset was more sudden (? previous infection) and the after-effects varied.

I submit that the cases reported were already infected prior to vaccination.

I am, Sir, yours faithfully,

BOUVERIE F. P. MCDONALD, M.D.

Wallasey, March 27th, 1927.

OPHTHALMIC BENEFIT.

To the Editor of THE LANCET.

SIR,—Sooner or later we all have to think about wearing glasses, and are most grateful when medical confrères kindly prescribe them for us; but it is a fact that only ourselves and our wealthier patients on the one hand, and hospital patients on the other, are in a position to take advantage of this exceptional skill. Is there not, then, a wide field for those services by trained opticians so definitely supported by Mr. Adrian Caddy, and yet as harshly scorned by Dr. Alex. Lumsden in recent issues of THE LANCET?

This question of efficient sight-testing is very important to all of us who in general practice—visiting or consulting—are being asked for directions about it almost daily. Mr. Caddy says that "the opticians in 80 per cent. of cases prescribe correct glasses and give their patients satisfaction"; but Dr. Lumsden holds that this figure is "pure assumption and therefore valueless."

What is the truth about this? It is far too serious a matter to be left thus uncertain; and I am wondering how many fellow-practitioners will agree with me that there is considerable dissatisfaction amongst patients at the expensive services of ophthalmic surgeons, and not too certain results obtained in this particular branch of ophthalmic practice. Also I should be interested to know if there are other medical men who, like myself, know of many patients who have been perfectly well-suited by opticians at moderate cost. As to the danger of serious organic eye disease being maltreated through patients having their "eyes tested" outside specialist circles, surely as a practical matter this is very small; the patient with glaucoma, new growth, or cataract, for example, will almost certainly consult a doctor just as soon if he goes to an optician as if he does not.

I am, Sir, yours faithfully,

E. L. HOPEWELL-ASH, M.D.

Grosvenor-street, W., March 27th, 1927.

To the Editor of THE LANCET.

SIR,—I have read with great interest the letter of F.R.C.S. Oculist on this subject in your issue of March 12th. The reasonable tone of the letter leads me to think that the writer, and many other members of his profession, would be prepared to hear the ophthalmic opticians' case.

The contention is advanced that the training of the ophthalmic optician is inadequate. It is true that it requires six years or more to obtain a medical degree, whereas the modern optometrist's training occupies only one half of that period. He takes a two years' full-time college course and attends one of the refraction hospitals for a minimum of one year. In addition, the optical student has to pass an entrance examination to the college and to matriculate, or pass a similar examination before qualifying. He also takes examinations for his college and hospital certificates, besides those for his qualification diplomas. I would, however, make a few observations in this connexion.

1. The course of study of the non-medical refractionist is of a highly specialised nature. It is a fact that he takes general anatomy, physiology, histology, embryology, pathology, &c., but much more time is devoted to the study of the eye and its connexions, and to physical and physiological optics, than is the case in the medical curriculum.

2. His education is naturally of shorter duration than that of the medical student, as all *treatment*, other than refractive (in which he recognises no higher authority), is outside his sphere. His function ends with the *recognition* of general or local pathological conditions. The number of drugs which he employs in his practice is small, and he is not required to possess the wide knowledge of materia medica of the physician.

3. The conscientious ophthalmic optician is not satisfied when he has completed his three years' training and passed all his examinations. He realises the vastness of the fields of investigation and research before him. He continues to attend a refraction hospital, and lectures arranged by his local and central associations, and to steadily enlarge his library.

4. His experience is also af a specialised character. The general medical practitioner, who practises refraction, may see two or three eye cases a week. The optometrist sees 20, 30, or even more. He thus becomes increasingly expert in the use of his instruments and can, and does, readily detect any departure from normality. To instance one important detail; he is so familiar with the variations in normal fundi that he immediately recognises any indication of a general or local pathological condition.

F.R.C.S. Oculist makes special mention of glaucoma. This disease, insidious in its incipient stages, probably causes more sleepless nights to refractionists than any other. Its importance, is, however, duly emphasised both in his training and his examinations. He is, by the instruction he receives and the practice he obtains, skilled in the manipulation of the ophthalmoscope, perimeter, scotometer, &c., and appreciates the significance of his findings. One refractionist has invented a very useful instrument for detecting the relative scotoma of glaucoma. Two other optometrists have carried out some valuable investigations and have devised a very useful method of

differentiating between a physiological and glaucomatous halo.

F.R.C.S. Oculist states that there is no parallel between the optical and dental professions. The former is now in a very similar position to that occupied by the latter before passing of the Dental Acts, which, incidentally, received some opposition from medical men. Before the establishment of the Dental Register, many inadequately trained and unqualified men were in practice. To-day, men who have never used a retinoscope, perimeter, scotometer, phorometer, or keratometer, and have never seen a fundus outside a text-book, are permitted to designate themselves "ophthalmic opticians," "optometrists," or "refractionists," and to represent themselves as qualified to conduct a satisfactory ophthalmic examination. It is regrettable that many ophthalmic opticians still retain shop premises. It is hoped that this practice will shortly cease.

Your correspondent further states that "opticians should not be allowed to test the eyes and supply the glasses as well." Would he also affirm that a physician who dispenses should not be permitted to prescribe drugs, or a dental surgeon to extract the teeth and supply the dentures? The public, and especially members of kindred professions, appreciate the amount and quality of the services rendered, without payment, by members of the medical profession, at hospitals. The profession has earned the esteem of all sections of the community by the way in which its members have carried out this work. Ophthalmic opticians are, however, doing similar work. The refraction hospitals are staffed by voluntary workers. One refractionist of my acquaintance travels weekly from Bournemouth to London, in order to assist in the work of the London Refraction Hospital; all service and expenses being gratuitous.

The suggestion that optometrists should go out of practice is unreasonable and impossible. I give two of the many reasons for this statement. (1) The non-medical refractionist has spent the best years of his life, and several hundreds of pounds, on his training. He has served the community well. It would be unthinkable to deprive him of his livelihood. (2) Optometrists have been examining eyes and prescribing optical corrections for over 300 years. They have done much to make the public "eye-conscious" and to improve the instruments and apparatus which they employ. Medical men have only practised refraction, to any extent, for a comparatively short period.

The public interest demands a speedy and satisfactory solution to the problem under discussion. This can be found by legally recognising the optical profession and thus ensuring, in the future, that every practitioner receives adequate training and passes suitable examinations before being permitted to practise.—I am, Sir, yours faithfully,

E. C. DUPONT, F.B.O.A. (Hons.)

Chobham-road, Woking, Surrey, March 23rd, 1927.

To the Editor of THE LANCET.

SIR,—The letters of Mr. Adrian Caddy and Mr. A. G. Lumsden in THE LANCET (Feb. 26th and March 5th respectively) represent almost extreme views on the ophthalmo-optical position.

It would appear that Mr. Caddy's so-called absence of esprit de corps is due to his lack of dogmatism. As correction of many of the statements made by Mr. Lumsden would be to general advantage, your kindness in publishing this letter will be appreciated.

Although deploring Mr. Caddy's vagueness, Mr. Lumsden does but "suggest" that "perhaps" Mr. Caddy will agree that the modern refractionist is so basely commercial that each client entering his establishment is looked upon as a "sale" instead of a "case" and that none pass out of his doors without being financially the poorer.

I regret that Mr. Lumsden should display so marked a degree of ignorance on the current position or reveal the type of "optician" with whom he is acquainted, but it is a rule of professional etiquette and a scientific principle that before sweeping statements are made the "facts" on which the statements are based shall at least be verified. If Mr. Lumsden (or any other so desirous) cares to visit—not the shop—but my consulting-room he will find that in no cases are glasses supplied unnecessarily, or cases, observed to be outside the refractionist's legitimate realm, fail to be referred to the proper authority. I have yet to be informed of a patient who has privately consulted an oculist without charge, whatever their refractive condition.

It is unfortunate that these two realms of ophthalmology—the medical and the physical, as it were—which should be coöperative, tend to be opposed, for no other reason, apparently, than £ *s. d.* Yet I fear that Mr. Lumsden has touched on a disastrous field when he mentions the "formidable list" of errors which he could compile from his case-book. We also have case-books, and if Mr. Lumsden were to furnish some representative cases of "errors" I could supply error for error ad infinitum—provided that only cases by properly qualified men on both sides were cited; but this ocular sword of Damocles would be of little service in harmonising the two and would be very like "the pot calling the kettle black."

Dictionaries are not text-books but adjuncts to them, and it is dangerous to quote from them. In Murray's Dictionary the definition of an oculist is "one versed in the knowledge *or* treatment of eyes," from which it would be possible to infer that in order to conform to this an oculist must either know without treating or treat without knowing! But no mention is made that a knowledge of the instruments of treatment is necessary, and again a "formidable list" could be produced, such as ordering decentred plano-cyls along their axes with a worked prism in the same direction, &c.

Mr. Lumsden's ideal method is for the wealthy to go privately to the uncommercial oculist and the unwealthy to go to the same oculist at the hospital. This is far from ideal (apart from being impossible), and I sympathise with the harassed oculist who arrives at the hospital clinic to find himself faced with the problem of carrying out anything from 6 to 18 refractions within about two hours. Incidentally the end of the two hours usually finds each patient supplied with a prescription and a weary band wending their cycloplegic way to the "optician," who has oft to respond to the appeals of busy clients surprised at the prospect of many hours to come under cycloplegia, by the instillation of eserine or the hasty assembling of the nearest available near vision correction for temporary use.

Finally, to balance Mr. Lumsden's case of the tailor wearing lenses suitable for compound myopic astigmatism and who required O.D. $+ 0{\cdot}50 \bigcirc + 3{\cdot}50$ cyl. axis 70° (or was it $+ 4{\cdot}00 \bigcirc - 3{\cdot}50$ cyl. axis 160°?) I recently examined a young lady of 22 years of age who had been suffering from frontal-parietal-occipital-cervical headaches, and had been treated by a medical practitioner with mustard poultices, but to no avail. She was almost emmetropic and orthophoric, the only apparent ocular defect being a 15° concentric contraction of both fields. I referred her to an M.B., F.R.C.S., registered on the M.O.H. list of ophthalmic surgeons who, after perusing my full report and examining the patient himself, supplied an almost identical prescription and replied that as he could find no evidence of glaucoma he was unable to account for the constriction of the fields.

Will not the solution of these problems be rather by coöperation than by contradiction?

I am, Sir, yours faithfully,

SIDNEY H. SOUTHGATE, F.B.O.A. (Exam.).

Horsington House, Woking, March 14th, 1927.

To the Editor of THE LANCET.

SIR,—The recent correspondence in THE LANCET concerning ophthalmic benefit for insured persons proves of added interest in consideration of the projected new Bill suggested for the registration of

sight-testing opticians. Your issue of Feb. 12th gives a résumé of the proposed Parliamentary Bill.

Having investigated the status and methods of the registered opticians (optometrists) in the Colonies, I have come to the conclusion that over there, as in Britain, there are many defects in the training and abilities of even the best sight-testing opticians. My conclusion is that they are not yet in a fit position to be recognised by this Government and the nation to prescribe lenses for uncomplicated errors of refraction. Different conditions in the Colonies necessitate a changed attitude in dealing with errors of refraction amongst the public. The opticians would like to go so far as to make it compulsory for everyone to possess at least two pairs of glasses, one to stimulate the eyes and the other to rest the eyes. What would be the result of registration of opticians? In the first place a tremendous advertising campaign would ensue, such as this country has never seen before, to blaze the information that spectacles alone are able to prevent and cure all diseases of the eye.

It is well known that the various organisations and associations of sight-testing opticians are at bitter enmity amongst themselves concerning the opinions they hold of their relative importance. To the most casual investigator it is patent that a big cause of this enmity has resulted from quarrels over matters of finance.

One of the leading organisations amongst sight-testing opticians is known as the Joint Council of Qualified Opticians. This autocratic body has despotic control over many opticians in England and Wales. Named in short the J.C.Q.O. (it is a limited company) its chief means of control and domination over its members is that it acts as a financial intermediary between the approved societies or insurance companies and the sight-testing opticians. An entrance fee is necessary to join the J.C.Q.O., an annual subscription is required, and 2½ per cent. of all the money paid by the insurance companies for spectacles is deducted as expenses. A further percentage is deducted in order to finance the huge advertising campaign which tells us that sight is might and that those opticians who portray the golden eagle in their windows are specially endowed with powers to give glasses to suit all sights, or to treat failing sight.

It is worthy of note here to remark that the insurance companies allow a testing fee of 5*s.* to the optician for every case for which spectacles are supplied. The immediate and ultimate desire of the optician is to sell glasses whether necessary or not at the highest possible figure. There is no suggestion that this projected registration would put an end to indiscriminate advertising or break up the big profiteering trusts who run multiple shops. The optician of to-day now adopts more than ever the attitude of the "dog in the manger." Until a few months ago all insured persons were seen without fee at the hospitals, but, nevertheless, the optician always obtained his profit on the spectacles sold. Since the introduction of ophthalmic benefit the optician is very annoyed because he does not invariably receive the testing fee of 5*s.* in addition to the profit derived from the spectacles sold. Whenever possible the patient is side-tracked from going to visit an ophthalmic surgeon, and for the many doubtful cases the slogan is "Supply some lenses and hope for the best."

The optician is ploughing a lone furrow when he broadcasts to the public that the simple wearing of spectacles will cure all diseases of the eye. Reference to the file cards and notes of any ophthalmic surgeon concerning any number of cases taken at random will demonstrate that, for the diagnosis and correct interpretation of most diseases of the eye, a knowledge of the function and pathology of the whole body is necessary. The relationship between disorders of the eye and the accompanying disorders in the nervous system needs no emphasis; as an example the differential diagnosis of the types of arterio-sclerosis of the retinal vessels, the investigation of partial amblyopias, cases of retrobulbar neuritis, and the ocular defects in such diseases as disseminated sclerosis or tabes dorsalis, belong to the domain of the ophthalmic surgeon alone. For the optician to pose before the public as being able to diagnose abnormal conditions of the eye from the medical point of view is an insult to the intelligence of the general public. The optician of to-day is lacking both in scientific ability and experience, and should not be trusted as competent to preserve the vision of the nation.

To emphasise the mistakes constantly made by opticians I will quote three recent cases:—

1. A middle-aged lady complaining of misty vision had her glasses changed by an optician three times within six months. A diagnosis of subacute iritis with a deposit in anterior chamber as made by an ophthalmic surgeon on first visit. After extraction of teeth the condition improved considerably.

2. A child, aged 3, treated by an optician for long sight, was found on visit to oculist to have a retro-ocular tumour, and excision of the eye was necessary.

3. A male, aged 50, complained of increasing dimness of vision, and was seen several times by an optician without diagnosis being made. On finally going to hospital a diagnosis of early optic atrophy was made, and the patient advised accordingly.

The average optician of to-day devotes too much attention to the commercial side. In contrast with the sight-testing opticians is the National Association of Dispensing Opticians, which represents the dispensing opticians of the country, who carry out most excellent work in arranging for the fitting and decentring of the lenses given in the prescription of the ophthalmic surgeon.

Those opticians pressing for State recognition do not mention incidentally that any individual with a knowledge of salesmanship can learn enough about eye glasses in a space of ten hours to call himself a fully qualified optician. What the public does not know, however, is that a period of at least ten years' specialised medical training and surgical experience is necessary before commencing the career of an ophthalmic surgeon.

I am, Sir, yours faithfully,

March 26th, 1927. OPHTHALMIC SURGEON.

*** The intention of the Minister of Health to set up a Committee to inquire into the question of registering opticians makes it necessary that our readers should be informed on all sides of the subject.—ED. L.

VENEREAL DISEASE IN THE MERCANTILE MARINE.

To the Editor of THE LANCET.

SIR,—The letter of Dr. L. L. Burton of New Zealand in your issue of March 26th seems to show that the Government and Port Authorities of New Zealand have not carried out the recommendations contained in the Report (Series P. Seamen. No. 2) entitled Protection of the Health of Seamen against Venereal Disease, published by the International Labour Office of the League of Nations, Geneva, in July, 1926.

The Report was drawn up by a Joint Commission consisting of five representatives of shipowners, five representatives of seamen, and two members of the governing body of the International Labour Office, and recommended that the circular published by the British Shipping Federation should be forwarded to various shipowners' and seamens' organisations. This circular recommended (1) "the dissemination amongst seamen of exact knowledge of the prevention and cure of venereal diseases," and (2) "the distribution at cost price to seamen of the requisite materials for prevention by immediate self-disinfection." The circular stated that the British Shipping Federation would be prepared to supply suitable literature for gratuitous distribution amongst seamen including

a lecture specially written for seamen by myself. The Report also recorded the opinions of various countries in regard to the prevention of venereal disease amongst seamen, such as:

Australia.—"Most satisfactory means for the dissemination of exact knowledge amongst seafarers and for immediate self-disinfection have been adopted."

Belgium.—"The Statutory Health Commission have approved a scheme giving wide facilities for the supply of disinfectants."

France.—"A committee on the prevention of venereal disease has been set up in connection with the Ministry of Health and Social Welfare."

Germany.—"Shipowners are required to distribute preventive medicines to seamen."

Poland.—"The Ministry of Public Health was planning to publish prescriptions in order to enable the population of the ports to avoid infection from venereal disease."

Sweden.—"A Royal Ordinance was in preparation prescribing that all ships must keep in stock certain kinds of medicine and other medical articles for the prophylactic and curative treatment of venereal disease."

The protection of the health of seamen against venereal disease is an important part of the general antivenereal campaign. The education of seamen in the prevention of venereal disease by immediate self-disinfection is, however, still opposed by a fanatical section of the community who have always obstructed such education of the public. However authoritative the body issuing the pronouncements on the subject and however wise and logical their recommendations may be the history of the past ten years makes it clear that the problem will not be seriously grappled until the conspiracy of silence has been finally exposed, and killed by the ridicule it deserves.

I am, Sir, yours faithfully,

H. WANSEY BAYLY,
Hon. Sec., S.P.V.D.

Harley-street, W., March 25th, 1927.

THE INCIDENCE OF LEAD POISONING.

To the Editor of THE LANCET.

SIR,—One of your readers at least, who lives abroad, is particularly grateful to you for the full reports of Parliamentary intelligence which you print from week to week. The great value of publicity in matters of social medicine is well illustrated by the debate on lead poisoning which you print in the March 5th issue, just received. I followed the controversy that was carried on under the able chairmanship of Lord Burnham from day to day, and can testify to the truth of his contention that immense pressure was brought to bear on the conference by the two industries whose interests were involved. The only safeguard against the pressure of vested interests is a full ventilation of facts—and bearing in mind that the interests in Great Britain are predominantly those of the white lead industry the British medical profession should be especially informed of all the facts presented by both sides in a conference where both interests are strongly represented. It is for this reason that I still regret the exclusion of your correspondent from the sittings of that particular subcommittee in Geneva when the strictly medical evidence was under scientific consideration. The matter is not unimportant. If it be agreed that the mortality and morbidity due to lead poisoning are preventable, we must not rest until the appropriate legal measures of prevention have been found. May you continue by your good offices to hasten that day.

I am, Sir, yours faithfully,

Ohio, March 19th, 1927. P. B. P.

ROYAL WATERLOO HOSPITAL.—It was stated at the annual court of the Royal Waterloo Hospital for Children and Women, Waterloo-road, London, that the extension now being built would, when opened at the end of May, provide six beds for paying patients, while a further 12 cots would be made available by the transfer of the operating theatre from the old building to the new. There are at present 110 cots and beds. Arrangements are being made for the equipment of an orthopædic department.

SOUTH AFRICA.

(FROM OUR OWN CORRESPONDENT.)

MEDICAL, DENTAL, AND PHARMACY BILL.

THAT hardy annual the Medical, Dental, and Pharmacy Bill was once more submitted for second reading in the Union House of Assembly in February.

Dr. Malan (Minister for Health), speaking in Afrikaans, said that the Bill was of so urgent a nature that its passage should be no longer delayed. It had become urgent first of all from an administrative point of view. Medical services in general throughout the Union should be uniform, but to-day the position was that every Province had its own Medical and Pharmacy Acts, with the result that there were at present 16 Medical Acts requiring to be administered by his department. Since the Bill was first introduced two medical faculties had been established in South Africa. It was essential that the medical profession and the medical faculties should stand in properly defined relation towards each other. Another essential point was that the trade in poisons should be brought under proper legal control. It had been said that there was no country in the world where it was so easy for a person to become possessed of poisons as South Africa. Dr. Malan went on to point out the necessity for due protection being extended to dental practitioners who had been thoroughly qualified for their profession. The dental mechanic was now really in a better position than the properly qualified man, who fell under the discipline of the Medical Council and was not allowed to advertise. The Bill aimed at rectifying this unsatisfactory position. The powers of the Medical Councils, as compared with the past, were to be curtailed. The Councils would recognise degrees issued in South Africa, and also overseas. In regard to the suspension and removal from the roll of persons found guilty of unprofessional conduct, an aggrieved person was given the right of appeal to the Supreme Court instead of to the Minister, as in the past. The Minister went on to urge the necessity of a register of persons duly qualified under the Act being kept for the protection of the public. Wherever the lives and the interests of the public were concerned, the persons entrusted with the care of such lives must be thoroughly qualified and duly registered. Regarding maternity nurses, the Bill made a great step forward. In the past the heavy infantile mortality had been due largely to unqualified maternity nurses. The number of qualified maternity nurses, especially in the rural areas, was insufficient, and such areas naturally had to be provided for. The Bill laid it down that in certain specified areas nobody would be allowed to practise as a maternity nurse for remuneration unless properly certificated and registered. Ninety five per cent. of the Bill, said Dr. Malan, was non-contentious. The most contentious part of the Bill was Clause 34, under which no one not duly qualified would be allowed to practise "for gain," and the word "gain" was defined in the Bill. The object was not to prevent a person from being doctored by an unqualified person, but to provide that no such unqualified person should be allowed to doctor another person for the purpose of gain. Mr. P. Duncan (Yeoville) maintained that the Bill was urgently required in the interests of the public. Mr. Alexander (Hanover-street, Cape Town) said it was not what was in the Bill that worried him, but what was left out of the Bill. He felt that drugless healers should receive some recognition in the Bill, provided they could prove that they had received a proper course of training in their particular professions. Some of the most eminent men in the country, including the Prime Minister himself, had consulted drugless healers and benefited from their teachings. He hoped the Minister would consent to exempt Christian Scientists from the restrictions imposed by the Bill. He also pleaded that dental mechanics should be allowed to practise the purely mechanical side of the dental profession in a more unfettered fashion than

at present. Mr. Mostert (Namaqualand) opposed the Bill because it did not lay down a tariff of charges, and Mr. Heyns (Middleburg, Transvaal) opposed it as a measure which would benefit nobody but the doctors. The question of fixing doctors' fees was also raised. The Minister of the Interior stated that the matter had engaged his attention for a considerable time, and he had at one time had a formula for inclusion in the Bill. So great, however, had been the obstacles that he had left the matter alone. Instead of ameliorating the position of the poor man, the fixing by law of doctors' fees would cause it to be aggravated, and many a doctor who charged a poor man a low fee would have to raise his charges. Also one had to take into account the question of the specialist who was inundated with patients.

The Bill was read a second time, and on Feb. 14th the House of Assembly went into Committee on the Bill.

The Medical Council.—On Clause 2, dealing with the constitution of the Medical Council and Pharmacy Board, an amendment was moved to the effect that the Medical Council should be so constituted that the general public and the medical profession be equally represented, lest the medical profession should become too powerful a monopoly.

The Minister of the Interior said there might be something in favour of this amendment, even if it only had the effect of removing suspicions which seemed to exist against the Medical Council. He was prepared to accept the amendment in part, so that the Minister would appoint to the Medical Council four medical practitioners and two persons not registered under the Act. There would further be one dentist on the Council. This amendment was agreed to. The Bill was further considered in Committee on Feb. 16th. On Clause 24 Mr. Heyns (Middleburg) moved the insertion of a proviso to the effect that a person who for five years before the commencement of the operation of the Act had practised as a doctor, and had taken fees for such practice, should be allowed to continue practising. The Minister of Public Health declared the amendment to be in direct conflict with the principle of the Bill, and it was negatived. Mr. Steytler (Albert) moved the insertion of a proviso to the effect that any person not registered in accordance with the Act should be entitled to treat a person who had been abandoned by a medical practitioner, and to charge for such treatment. The amendment was negatived by 51 votes to 22.

On Clause 34, dealing with penalties for practising as a medical practitioner when unregistered, Mr. Alexander pleaded for the chiropractor, and moved the insertion of a proviso that nothing in the clause should apply to any drugless healer, who would have to prove to a Board that he was qualified to practise his particular form of healing. On the following day the clause was further considered in Committee of the Assembly, and an animated discussion took place.

The Minister of Public Health opposed the amendment, observing that the laws all over the world were being tightened up against drugless healers. The Minister of Labour (Mr. T. Boydell) said that a refusal to pass the amendment would put the clock back 50 years by closing the door to new and modern methods of healing. He heartily supported the amendment, which simply made provision for the recognition of qualified drugless healers. He himself had received greater benefits from drugless healers than from medical men, and he refused to be compelled to go to the latter. He was entirely opposed to the monopoly set up by the Bill. Mr. Duncan challenged the Minister of Labour to tell him any method of healing which had not been carefully inquired into by the medical profession. Had the osteopaths and other people referred to ever tried to prove their methods scientifically, or ever submitted them to scientific tests? He was not a believer in drugs, and he agreed that some medical men believed too much in applying drugs. The amendment was eventually negatived by 53 votes to 24, and the clause was passed.

Precaution against an Influenza Epidemic.

Precautionary measures against an influenza epidemic are being taken by the Pretoria health authorities, who are advertising for persons willing to undertake nursing in the event of an outbreak. Dr. Boyd, the M.O.H., does not anticipate a serious outbreak of influenza, but as influenza is prevalent in England at the present time, he has considered it wise to take precautionary measures, and to have a programme mapped out in event of such an outbreak. An elaborate scheme for coping with an epidemic has been worked out in Cape Province.

Outbreak of Cerebro-spinal Fever.

An outbreak of cerebro-spinal fever in the Vredenburg district of the Cape Province, in the nature of an epidemic, is causing some uneasiness. Some 30 cases have occurred during the last two months, a large proportion of them ending fatally.

A Hospital Benefaction from Native Chiefs.

A noteworthy illustration of the desire of the more advanced native chiefs to coöperate with Europeans in furthering their common interests is afforded by the action of two native chiefs in the Rustenburg area of the Transvaal. They have contributed a sum of £700 towards the establishment of native wards at the new Paul Kruger Memorial Hospital which is being erected at Rustenburg. Rustenburg has a population of 1733 whites and 960 natives; it is situated 70 miles from Pretoria, and 80 miles from Johannesburg.

Government Hospital Inquiry.

The Minister of Public Health has appointed a committee to inquire into and report upon certain matters connected with the hospitals and district nursing arrangements in the Union. Sir Edward Newbury Thornton will preside, and the terms of reference are to inquire into and report upon the existing public hospital and district nursing accommodation and facilities in the Union, their adequacy and suitability or otherwise; their linking up and coördination by the utilisation of modern facilities for transporting the sick, and by other means with each other, and with institutions for dealing with cases of infectious or communicable diseases, and their future organisation, control, and development under the Provincial administration. If deemed advisable by the committee, and with due regard to the existing hospital position and arrangements, the committee will submit recommendations as to the division of each Province into hospital areas, and as to the organisation and administration, including financial arrangements, of the hospital areas so defined; each area is to have at least one adequately equipped central hospital to link up with such subsidiary institutions, cottage hospitals, public dispensaries or clinics, stations for district nurses, and so forth, as the committee may consider necessary for providing efficient and economical hospital and sick nursing service for both urban and rural areas.

Pretoria's New Hospital.

The general hospital shortly to be built in Pretoria will be one of the largest and finest institutions of its kind in the Union, being second only in size to the Johannesburg General Hospital. Building plans have been completed, the laying out of the grounds decided, and tenders called for the erection of the first block of buildings. It is estimated that occupation will have to be deferred until early in 1929. A sum of close on £300,000 has been voted for the hospital. There will be a total accommodation for 224 patients. Special care is being taken in regard to the construction of a modern children's ward.

MEDICINE AND THE LAW.

THE HUME-SPRY CASE FURTHER CONSIDERED.

"Good faith" and "reasonable care." These are plain words with plain meanings; surely, one might think, wide enough to give ample protection to the medical practitioner who with due regard to the formal requirements of the Lunacy Act signs a medical certificate. That in the last resort these words may and do protect is evident from the highly satisfactory verdict given in the Hume-Spry *v.* Smith & Another case abruptly concluded last week. But that they do not protect the defendant medical practitioners, except where the action does not disclose a prima facie case of bad faith or lack of reasonable care, from a year or more of anxiety, waste of time, and loss of money is equally manifest. Certain amendments of the law, discussed in THE LANCET last week, have been proposed, and in the meantime the medical issues of the case deserve careful attention. The charge of bad faith appears to have been based on the fact that the defendants made no endeavour by independent inquiries to test the plaintiff's delusions. There is no proof that it is the practice, which is not required by the Act, to make such independent inquiries; and, indeed, cases can easily be imagined—the present one, for example—in which such a search carried out by the medical practitioner might have unforeseen consequences and leave the inquirer himself in a very unenviable position. An ethical point turns on a matter of great medical interest. It will have been observed that an essential part of the medical evidence for the plaintiff was that reasonable care had not been exercised by the defendants because they had not made a physical examination of Mr. Hume-Spry. In varying degree this remarkable doctrine was supported by the plaintiff's expert witnesses, though one of them merely said that it was necessary to make a physical examination to exclude the possibility of the mental symptoms arising from some bodily illness. All of this is quite immaterial in the certification of the insane, in which the medical practitioner is concerned solely with the mind and conduct of the person examined. It seems at any rate possible that if greater weight had been given to these considerations more than a year ago when the order of the Master in Chambers staying this action was reversed by the Court of Appeal, the case would not have been allowed to go forward for trial by jury and much time, worry, and expense would have been saved. On the other hand, it is probable that only trial by jury could have vindicated so completely the defendants and have so utterly dissipated the aspersions cast on several persons who had the misfortune to be involved.

MEDICAL SOCIETY OF MANCHESTER.—Prof. J. S. Haldane will on April 6th give an address to this Society entitled Biology and Medicine.

LONDON FEMALE LOCK HOSPITAL.—On March 23rd Lord Radstock opened a new operating theatre and genito-urinary department at this hospital, which is now in its 180th year. Mr. Charles Gibbs, senior surgeon, said that the hospital now became a complete unit. It would be possible henceforward to deal with patients suffering from abdominal complications causing either chronic disease or immediate danger to life. These had previously been transferred to Charing Cross Hospital, which had been regrettable scientifically because they were preferably treated at the hospital to which they came for treatment of their primary infection. The new genito-urinary department would be able to deal with diseases coincident with venereal infection. The ward would also be available for the more serious operative procedures of childbirth. It was proposed to admit women who could not pay anything at all and also those who could afford to pay a small sum per week. Until now there had been no place in London where poor women suffering from genito-urinary and allied diseases could be taken into hospital and treated for a small weekly payment. Mr. Gibbs made a special appeal for the gift of X ray equipment.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

THE CARE OF PHYSICALLY AND MENTALLY DEFECTIVE CHILDREN.

ON Thursday, March 24th, the motion for the second reading of the Consolidated Fund (No. 1) Bill,

Mr. TREVELYAN said that the Board of Education ought not to be issuing economy circular after economy circular but ought to be dealing with black-listed schools. There were 623 schools that had been absolutely condemned and which had not been replaced; they contained 160,000 children. In making their list of really insanitary and unsatisfactory schools which could not be tolerated any longer the Board adopted a very moderate and merciful standard. Yet there were 600 schools which had been absolutely condemned by any conceivable standard which they possessed. They had been told that some provision had been made in the case of provided schools, but it was made quite clear that in the case of what must be the majority of these schools, mainly the non-provided schools, practically nothing had been done. The Board of Education could not play two rôles. It could act as a department of the Treasury, and if economy was its primary motive education could not progress very much.

Mr. HARRIS said that in Circular 1358, dated March 31st, 1925, the President of the Board of Education said: "My obligation is to ensure that every provision should be made for the ascertainment and treatment of children suffering from incurable infirmities, or infirmities the effect of which can in some measure be mitigated by special teaching, so that they may not become a permanent burden on the community to which they belong." Those were excellent sentiments in principle. After the lapse of two years the right hon. gentleman changed his attitude. In his later Circular No. 1388, dated February of this year, he had discovered that the whole subject needed inquiring into. He said: "In regard to the provision for mentally defective children, authorities will be aware that this very difficult problem is now being explored by a special committee and save in exceptional circumstances it would not seem desirable to incur any expenditure on new schools, and such children ought to be provided for in existing schools." What a pity the right hon. gentleman did not think of that two years ago and appoint a committee of inquiry then.

Lord E. PERCY: A committee was appointed by my predecessor.

Mr. HARRIS said the right hon. gentleman ought to have been conscious of that when he sent out his circular in 1925. He suddenly remembered this committee in 1927 when he wished to make an excuse for discouraging local authorities from doing their duty in providing for these pathetic cases.

Mr. MORRISON said he wished to draw the attention of the President of the Board of Education to the question of the subnormal children in this country and the effects of his policy in regard to them during the past two years. Under the existing law local education authorities were required to make educational provision for all children who were defective and who were capable of benefiting therefrom. The figures given in the House nearly four years ago on this subject were very alarming, because they showed that many authorities were not carrying out the law. A good deal of pressure was brought to bear on the Board of Education and Mr. TREVELYAN, who was then President of the Board, issued Circular 1341 dealing with special schools for mentally defective children in which he pointed out that "the problem is too urgent to be left till it is solved in its entirety in the manner which the Statutes contemplate, and which alone can provide a satisfactory solution." According to the official figures there were 2000 blind children in this country and of those there were 262 who were not attending any school at all, and 63 who were attending public elementary schools. That was an extraordinary state of affairs, and seemed to be not only a waste of money, but also a very serious handicap on the teachers. The total of the children who were partially blind was 4692 and out of that number 2069 were in public elementary schools and 339 were not attending any school at all. If it was possible to do such wonderful work as had been done for the soldiers blinded in the war at St. Dunstan's, the same specialised training applied to the partially blind children would produce even more wonderful results, because the institutions would get hold of the children at a much younger age. Experience indicated that 50 per cent. of those trained in special schools for blind children could be equipped to earn a useful livelihood. Surely the President of the Board ought to try to extend that work instead of hindering it. With regard

to deaf children, it had been ascertained that there were 4154 totally deaf children in this country and of those 319 attended ordinary schools. They were stone deaf, and 247 were not attending any school at all. At the annual meeting last week of the National College of Teachers a resolution was passed viewing with apprehension the possible consequences to deaf children involved in the circular issued by the Board of Education. They said that these deaf and partially deaf children if they did not receive a specialised education, were frequently taken to be insane later in life, when they were not really insane at all. There were 2170 partially deaf children in this country and 1632 of those were in ordinary schools and 80 were not in any school at all. These figures were underestimated. With regard to physically defective children including cripples, those suffering from tuberculosis and delicate children who required open-air schools, the official figures showed a total of 142,889, and of these 94,332 were in public elementary schools and 18,931 were not in any school. That showed that there were 113,263 physically defective children not receiving the specialised education which their disability required, and whose chances of earning a living were seriously endangered thereby. Economical proposals applied to physically defective children in the way suggested was a penny wise and pound foolish policy. Mentally defective children were referred to in Circular 1388, which showed that out of 33,000 mentally defective children in England and Wales 12,470 were attending elementary schools who should not be there at all. Included in the 33,000 there were 3872 who were educable, but who were not attending any school at all. There were still 110 authorities who had made no provision for teaching these children, although they could be compelled by law to make such provision. The circular issued by the Board of Education was really the meanest form of economy that the mind of man ever conceived. The records of the existing schools for mentally defective children showed that from 60 to 70 per cent. of these children were at work two years after leaving those schools. He wished to know whether the suggestion behind this circular was that there should be nothing further done by local authorities to provide for mentally defective children, or was the suggestion that the Board of Education officials were working out some new idea under which the mentally subnormal children should remain in schools for defectives until they were 11 years of age? Any such suggestion would mean an entire reconsideration of the question of staffing. The presence of these children in the ordinary classes hampered the progress of the normal children. Out of the 33,000 educable mentally defective children in England and Wales on March 31st last only 17,154 could be accommodated. The effect of the official circular would be to hold up indefinitely all provision for dealing with one of the most urgent and serious educational and social problems which they had to deal with at the present time. The doctors of the School Medical Service could never do the work of the teacher, so far as mentally defective children were concerned.

Lord E. PERCY (President of the Board of Education) replying to the debate, said that the fact that the blind children were not attending special schools was due, in the main, either to the unwillingness of the parents to have their children placed in these schools, or to the children having arrived at an age at which the obligations to attend the schools no longer held good. The real main problem of the mentally and physically defectives at the present moment was that there were areas where there were only a few defective children and not enough for a special school. They could only be dealt with either by having a class in connexion with an elementary school, or by sending them to a residential institution. After all, the parents had something to say about their defective children, and it was not always easy to deal with them for that reason. That these special schools were able to do some work he did not deny, but that the children became self-supporting, or that the schools were necessarily on the best lines for the good of the children was a very grave question. The powers of compulsion which the Board possessed in regard to mentally defective children constituted the gravest responsibility which the Board had got, and if they dealt with those children wrongly it might be better that they had never dealt with them at all. Great play had been made in the debate about the mysterious committee on mental deficiency, as if it had been suddenly revealed. But if hon. Members had ever read the reports on the health of school-children by the Chief Medical Officer of the Board of Education for 1924 they would have found on page 145 a long footnote explaining the composition of that committee and a considerable passage in which its object was explained. Teachers were not excluded from it, and one member of the committee was Miss REDFERN, the headmistress of a residential school for mentally defective children. As regards the question of the black-listed schools the noble lord said that the bulk of the provided schools would be dealt with by the end of the programme period; and without laying down a hard-and-fast date for the termination of recognition, he thought that every local authority should proceed on the assumption that all the A schools on the list, and the bulk of the B schools, should have been dealt with by the beginning of the school year—that meant September, 1930. The position in regard to the non-provided schools was not quite so clear, but he did not think that the progress up to date had been unsatisfactory. The managers of non-provided schools had to face many difficulties.

Mr. MORGAN JONES said that in reading the report presented by Sir GEORGE NEWMAN recently, he noticed that he said that in 1900 there were 142,912 children under the age of 11 who died. In 1921 that number had been substantially reduced, but it was still colossal; it was reduced to 112,906. In 1925 it was still 96,669. Out of that figure 81,080 were children under 5. That was a staggering and alarming figure, and it entitled them to urge that some additional provision should be made to bring these younger children, at any rate at the age of 4 or 5, into some form of nursery school where their physique as well as their moral training might be more amply looked after. According to the report of the medical officer of the London County Council, Dr. MENZIES, there were 10,000 children who had suffered, or were suffering from rheumatic symptoms. Very substantial work had been done in this department, but, having regard to the effects in later life of this disease, there was a strong case for the intensification of the medical service attached to the educational service throughout the country.

The Duchess of ATHOLL (Parliamentary Secretary to the Board of Education) said that everyone who had read the report of the medical officer on the health of young children must feel grave concern at the figures given with regard to children under 5 years of age. The nursery schools were doing splendid work in improving the health and general training of young children. But they did not look for health in this matter from nursery schools alone. They also recognised the valuable work done by day nurseries and the extent to which voluntary effort had contributed to this task. With the present financial difficulties with which the country was faced anyone responsible for educational administration would welcome every help that voluntary effort could give. Rheumatism was another disquieting feature disclosed in the principal medical officer's report. She could assure the House that children suffering from heart trouble caused by rheumatic affection were to an increasing extent being admitted to the physically defective schools and a very welcome feature of the problem of the physically defective child was that in some areas—thanks to the provision of orthopædic treatment for the crippled child, which if given at a sufficiently early age, offered hope of a real cure—they were finding that increasing space was being found for the rheumatic children, or children with affected hearts, in schools originally intended for the crippled child. She thought they were doing something in an ever-increasing degree to meet the unhappy case of these children.

The Bill was read a second time.

HOUSE OF LORDS.

WEDNESDAY, MARCH 23RD.

Air Force Accidents.

Lord GORELL called attention to the frequency of accidents in the Royal Air Force. He said that the Secretary of State for Air had said that there were 58 fatal accidents in the Force last year. That was an average of more than one a week, and only in the previous week there were some more. The recent statement by the Prime Minister had not entirely removed all the sense of uneasiness on this question. Most of these accidents occurred, as far as could be known, from certain definite causes. He thought that it was admitted that the "stalling" of a machine, especially when it was near the ground, was at any rate a very frequent cause of these accidents. He found among the technical experts criticism of the Air Ministry for having been rather dilatory in testing and possibly applying safety devices. He did not associate himself with those criticisms, but he would like further information on the matter.

The Duke of SUTHERLAND (Paymaster-General), replying for the Air Ministry, said that from some criticism which had recently appeared in the Press, and had even been heard in the House of Commons, it might almost be supposed that the Air Ministry kept no proper record or statistics, but simply accepted the accidents as necessary concomitants of aviation. It might even be supposed that the Air Ministry made no real endeavour to reduce the number of these accidents. Nothing was further from the truth. The Prime Minister had satisfied himself that the fullest statistics had been kept since the war, and that the whole

problem was under constant review from every angle. The Secretary of State and the Air Council had the very strongest motives for reducing the number of these accidents, if for no other reason than that such accidents were bound to act as a deterrent to recruiting. The Prime Minister in his recent statement had shown conclusively that those accidents which were due to what he called remediable causes were a very small proportion of the whole, and that no particular type of machine, and no particular station or unit, was more prone to accidents than others. It was a sad fact that aviation must for many years to come entail accidents. The real question was whether the number could be successfully reduced—in other words, whether unnecessary and possibly avoidable accidents took place. There was a constant improvement from 1921 to 1925 in the ratio of accidents to hours flown, whether fatal accidents, accidents involving injury to personnel, or accidents only causing material damage to machines. The actual number of accidents irrespective of the amount of flying was not a fair basis of comparison, nor was the actual number of lives lost. A comparison with other countries did not suggest that our accident rate was excessive. In some respects—for instance, in accidents due to mechanical causes and maintenance—our record was a good deal better than other countries. The Air Ministry was by no means content, however, with the improvement that had taken place. Continual efforts to decrease the number of accidents were being made. Short of crossing the psychological border-line, which as the Prime Minister had said would inevitably undermine the pilot's morale and destroy the fine spirit existing to-day, every precaution was taken. Unnecessarily dangerous flying was forbidden and the prohibition was enforced. Pilots were constantly under supervision both by senior officers and by the Royal Air Force Medical Service. The Medical Service was fully alive to the necessity of detecting any incipient physical unfitness, strain, or staleness before harm could be done. Abstemious habits, as far as possible, were enforced by regulation and inculcated by example. In not one single case had indulgence in alcohol been proved to have caused or contributed to an accident in all the years covered by these statistics. In the matter of design and research also efforts were being made towards greater safety.

Lord THOMSON said, like everyone else who had been associated with the Air Ministry, he had lived rather under the shadow of this toll of human lives due to accidents. He had had a certain experience of the psychology of our airmen when he was Secretary of State for Air. One could not live with these lads for any length of time without noticing that some of them were very highly strung. They were extraordinarily intelligent. They had courage of the most remarkable kind, and in a way the more highly strung they were the better pilots they were in war and the better they were for this particularly dangerous sort of work. A great many of them were reckless, and were rather like young thoroughbred horses, most difficult to handle. They were a constant source of anxiety to those in charge of them, but no one denied that they were one of the glories of the race. The men who trained our pilots had not only to have high professional qualities, but they also must have some of the qualities of a physician. They were dealing with these highly strung young fellows, and they had to watch their health and their state of mind, for if either was at all defective at any given moment, that might make all the difference between a successful air evolution and a fatal crash. It was in the interests of these men that they should be very chary about giving publicity to reports.

TUESDAY, MARCH 29TH.

Indian Medical Service.

Lord LAMINGTON asked the Secretary of State for India what steps were being taken to reconstruct the Indian Medical Service and to provide adequately for the medical needs of the people of India?

The Earl of BIRKENHEAD said since this question was last raised in their lordships' House he had been in constant correspondence with the Government of India. They in their turn had consulted the provincial governments in India with a view to constructing the future organisation of the medical service in India. He had recently received from the Government of India their final proposals, and his comments on these were forwarded to them on Feb. 17th. Pending receipt of their reply he was not in a position to give to the House full details of the scheme which it was proposed to adopt. The cardinal features of it were: (1) the retention of the Indian Medical Service, and the necessary war reserve of trained medical men; (2) the provision of European medical attendance for European officers of the superior Civil Service and their families; (3) the creation of provincial medical services, recruitments for which would be carried out by the local governments themselves. He anticipated that it would be possible to bring the new scheme into operation at no distant date.

Sale of Food and Drugs Bill.

On the motion of Lord LAMINGTON the Sale of Food and Drugs Bill was read a second time.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 23RD.

Vivisection.

Lieut.-Commander KENWORTHY presented a petition signed by 15,286 inhabitants of London and other places praying that the practice of vivisection be prohibited by law.

Cost of Beds in Military Hospitals.

Sir FREDRIC WISE asked the Secretary of State for War the cost of a hospital bed per day and how it was approximately made up.—Sir L. WORTHINGTON-EVANS replied: The estimated daily cost of each occupied bed is 13*s.* 7*d.*, of which 2*s.* 6*d.* is for the patient's maintenance, 7*s.* 4*d.* for staff, and 3*s.* 9*d.* for standing charges.

THURSDAY, MARCH 24TH.

Secretaries for School Medical Officers.

Dr. VERNON DAVIES asked the President of the Board of Education if he had received any reply from the Lancashire Education Authority with respect to his inquiry as to their provision of secretaries for school medical officers; and, if so, had he come to any decision as to the necessity or otherwise for such appointments.—Lord E. PERCY replied: I have received a report on this subject. I understand that the 15 clerks employed as secretaries discharge a number of duties which, in other areas, fall upon the headquarters clerical staff and they are, therefore, not to be regarded as a net addition to the staff required for the purposes of the School Medical Service. I hardly think the Board are called upon to pronounce an opinion on the merits of minor administrative arrangements of this kind, which must necessarily be left to the discretion of the authority.

Feeding of Necessitous Children.

Mr. WESTWOOD asked the President of the Board of Education what was the State grant for feeding of necessitous children in England, and total expenditure for same, for the years 1922, 1923, 1924, 1925, and 1926 respectively; and what was the estimate for 1927.—Lord E. PERCY replied: The following is the information asked for: The expenditure of local education authorities on the provision of meals in the financial years in question was as follows: 1921–22, £951,000; 1922–23, £256,000; 1923–24, £152,000; 1924–25, £138,000; and 1925–26, £169,000 (pre-audit). The expenditure for 1926–27 cannot be ascertained until after the conclusion of the year. As regards the coming financial year, the estimates of local authorities have not yet been received, but, as at present advised, I anticipate that the expenditure will approximate to the normal. Grant is not paid upon the separate items, but upon the whole, of an authority's expenditure on elementary education, of which expenditure on the provision of meals forms a small part.

The Registration of Opticians.

Mr. ROBERT WILSON asked the Minister of Health whether he had decided to set up a committee to inquire into the question of registering opticians; and, if so, would he state the terms of reference and the personnel of the committee.—Mr. CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative. The terms of reference to the Committee will be to consider the Optical Practitioners (Registration) Bill and to make recommendations. The personnel of the Committee is not yet quite complete, but I hope to be in a position to announce its composition at an early date.

Mr. R. MORRISON: May I take it that the Committee's terms of reference and their deliberations will be entirely confined to the question of opticians only?

Mr. CHAMBERLAIN: The Optical Practitioners (Registration) Bill is the one which they will consider.

Mr. H. WILLIAMS: Can the Minister of Health say whether the Committee is likely to report before May 13th, the date on which the Bill is set down for second reading?

Mr. CHAMBERLAIN: I do not think I am in a position to answer that question. The Committee is only just being set up.

Housing Conditions and Public Health.

Mr. DAY asked the Minister of Health whether, in view of the cost to the country caused by sickness owing to bad housing conditions, he will consider the introduction of legislation having as its object the licensing of all property owners who owned and let houses with a rateable value under £80 a year, so as to enforce an approved standard of sanitation and repair in these houses.—Mr. CHAMBERLAIN replied: Local authorities already have wide powers under the Housing Act and Public Health Acts to secure

the remedy of defects in, and the necessary repairs to, any houses, including power to execute the works themselves in default of the owners and to recover their expenses from the owners. In the circumstances I do not consider that legislation on the lines suggested is necessary.

Mr. DAY: Can the Minister of Health bring pressure upon the local authorities to see that they do their duty in regard to this question?

Mr. CHAMBERLAIN: Yes, continuous pressure is being placed upon local authorities in regard to this subject.

Sale of Pasteurised Milk.

Mr. SHORT asked the Minister of Health the number of persons licensed to sell pasteurised milk during 1926, the number of establishments, and how often such establishments were inspected.—Mr. CHAMBERLAIN replied: According to the information received from local authorities, the number of licensed pasteurising establishments in England and Wales at the 31st Dec., 1926, was 99, and the number of shops and other establishments licensed for the sale of pasteurised milk was 591. These licences are issued by the local sanitary authorities and I have no information as to the number of times the establishments were inspected.

Licenses for Certified and Grade A Milk.

Mr. SHORT asked the Minister of Health the number of producers' licences for Certified and Grade A Milk issued in England and Wales during 1926; and whether any increase was shown upon the figures for 1925.—Mr. CHAMBERLAIN replied: The numbers of producers' licences for Certified Grade A (Tuberculin tested), and Grade A Milk current in England and Wales on the 31st Dec., 1926, were 120, 131, and 258 respectively. The corresponding figures on the 16th Dec., 1925, were 95, 93, and 170. I should add that the licences for Grade A Milk are granted by local authorities and that the figures which I have given in regard to this grade are only approximate.

The Improvement of Flour.

Mr. ROBERT WILSON asked the Minister of Health whether he proposed to set up an inquiry into the physical, as opposed to chemical, methods of improving flour which were mentioned with favour in the report of the Departmental Committee on the treatment of flour with chemical substances.—Mr. CHAMBERLAIN replied: I understand that the improvement of flour by physical means is still in an experimental stage and that before making their report the Departmental Committee on the treatment of flour with chemical substances had before them all the evidence that is at present available on the subject. In these circumstances I do not propose to set up any further inquiry into the question at the present time..

Pensioners and Supply of Light Metal Limbs.

Mr. LANSBURY asked the Minister of Pensions if, in view of the fact that light metal limbs were only granted to pensioners with below-knee amputation on the special recommendation of the surgeons, he would consider the desirability of certain other circumstances, such as long distances the pensioner might have to walk, or long working hours, being taken into consideration when a pensioner's application for light metal limbs was under consideration.—Major TRYON replied: All the circumstances of a case are taken into consideration in determining the nature of the limb to be supplied. With regard, however, to the particular circumstances referred to by the hon. Member, I would remind him that as I stated in reply to the hon. Member for Ripon on the 10th instant, a wooden limb can now be supplied which is actually lighter than a metal limb for the purpose of amputations below the knee.

FRIDAY, MARCH 25TH.

Cost of Tuberculosis Treatment.

Mr. DAY asked the Minister of Health the total amount of sums expended in this country during each of the last three years in respect of tuberculosis treatment.—Mr. CHAMBERLAIN replied: The total expenditure in England and Wales on the carrying out of the approved schemes for the treatment of tuberculosis during the last three completed financial years, excluding capital expenditure, was as follows:—Year ended March 31st: 1924, £2,884,062; 1925, £3,034,600; 1926, £3,157,879 (provisional figures).

MONDAY, MARCH 28TH.

English University Education in Palestine.

Colonel WEDGWOOD asked the Secretary of State for the Colonies whether he had any plans for the establishment of an English-speaking university, college, or degree-giving institution in Palestine.—Mr. AMERY replied: The Government of Palestine have not contemplated the establishment in that country of an English-speaking university, college, or degree-giving institution. The Board of Higher Studies is, however, endeavouring to arrange three years diploma courses and examinations of approximately the ordinary B.A. standard. The first intermediate examination will be held in July next..

Quarantine Station at Haifa, Palestine.

Lieut-Commander KENWORTHY asked the Secretary of State for the Colonies whether he was yet in a position to make any statement with regard to the quarantine station at Haifa, Palestine; if he was aware that the station is situated near a swamp and stagnant pools notorious as a breeding-ground for malaria-carrying mosquitoes; and whether he would give instructions for the quarantine station to be moved to a healthier site without further delay.—Mr. AMERY replied: I have received from the High Commissioner for Palestine a full report on the quarantine station at Haifa, of which I am sending a copy to the honourable and gallant Member. Lord Plumer reports that there is now no mosquito breeding whatever in the area within one and a half kilometres of the station, and that no anopheline mosquitoes have invaded the quarantine station from the swamp which is that distance away. As regards the last part of the question, Lord Plumer is advised that no more suitable and no healthier site than the present one can be found for the permanent quarantine station. Certain minor improvements in regard to housing conditions at the station are, however, being put into effect.

Unqualified Practice in Actinotherapy.

Mr. CADOGAN asked the Minister of Health whether, in view of the prevalence of unqualified practice in actinotherapy and of the danger thus caused to the public, he would make regulations whereby only qualified medical practitioners should be allowed to treat patients with the ultra-violet ray.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: My right hon. friend has no authority to make regulations of the kind suggested. But in cases in which his approval is required to the installation of artificial light treatment, it is made a condition of approval that the treatment will be given under the supervision of medical practitioners who have had experience of this form of treatment.

Training Centre for Actinotherapy in London.

Mr. CADOGAN asked the Minister of Health whether, in view of the increasing importance of actinotherapy in the treatment of various diseases, he was prepared to make provision for a central clinic and training centre in London where doctors and nurses could be instructed in this branch of medical science.—Sir KINGSLEY WOOD replied: My right hon. friend is informed that such a clinic as my hon. friend has in mind has already been established in London and that provision is made at this clinic for the training of doctors and nurses.

Special Committee on Mentally Defective Children.

Mr. HARRIS asked the President of the Board of Education how the special committee of the Board on mentally defective children is constituted and what were the terms of reference to the committee; whether representatives of the Board of Control had been added to the committee; and whether any other associations of persons interested in the care and treatment of mentally defective children were to be invited to join the committee or to give evidence before the committee.—The Duchess of ATHOLL replied: If the hon. Member will look at the passages in the Chief Medical Officer's Reports for 1923 and 1924 he will see that the committee includes among its members a Commissioner of the Board of Control as well as other persons with special knowledge and experience of the subject. My right hon. friend understands that the committee have not yet decided whether to invite evidence.

Passage Concessions for Indian Medical Officers.

Mr. PETHICK-LAWRENCE asked the Under Secretary of State for India whether a decision had now been reached as to granting passage concessions to Indian officers who entered the Indian Medical Service by competitive examination in London.—Earl WINTERTON replied: My noble friend has found it necessary to consult the Government of India further on the question of providing facilities for study leave, but hopes that an announcement can be made very soon.

TUESDAY, MARCH 29TH.

Sexual Offences against Young Persons.

Mr. R. W. SMITH asked the Secretary of State for Scotland if the Government proposed to introduce legislation dealing with the question of sexual offences against young persons

in Scotland; and, if so, when such legislation would be introduced.—Sir JOHN GILMOUR replied: I propose to await the Report of the Scottish Committee on Young Offenders which is now sitting, and to consider the two reports together. I have already taken action on recommendations of the Committee which did not require legislation.

Research Work and Tuberculous Milk.

Mr. EVERARD asked the Minister of Agriculture whether any research work was being carried out at present to endeavour to discover a quick and effective method of determining whether milk was tuberculous.—Sir G. HENNESSY (Comptroller of the Household) replied: I have been asked to reply on behalf of the Lord President of the Council as the subject falls within the scope of the Medical Research Council. Various investigations have been promoted during the past few years in the attempt to devise better methods for the purpose. One of these, undertaken jointly by workers at the National Institute for Medical Research and at the National Institute for Research in Dairying, made possible a considerable improvement of pre-existing methods. An account of this was published in 1925 and I can give my hon. friend the reference. The subject is being kept in view, and further investigations will be made if new means of attacking this difficult problem can be found. The reference to which I have referred is as follows: S. R. Douglas and L. J. Meanwell: A New Method for the Concentration of Bacilli in Tuberculous Milk (*British Journal of Experimental Pathology*, 1925, vi., 203).

Roadside First-aid.

Mr. DAY asked the Minister of Transport if his attention had been drawn to the scheme of roadside first-aid that was being introduced by the British Red Cross Society and the Order of St. John on the important arterial roads; and whether he would consider erecting special kiosks on the roadside to give the Society facilities for storing their equipment.—Colonel W. ASHLEY replied: While welcoming any effort that may be made to render assistance to wayfarers, I am not in a position to incur expenditure on the erection of kiosks.

Eyesight Tests for Motorists.

Mr. DAY asked the Minister of Transport if he was aware that there were approximately 15,000,000 people in Great Britain who suffered with imperfect vision; and would he consider the introduction of legislation making it compulsory that all applicants for a motor-driving licence should pass a special eyesight examination, either by their own medical practitioner or competent optician, which should include tests for distance and colour vision, and produce a satisfactory certificate to the licensing authority before a driving licence was issued.—Colonel W. ASHLEY replied: The draft Road Traffic Bill which has recently been published contains provisions for the withholding of a driver's licence from a person suffering from any physical disability (including defective vision) which is likely to cause the driving of a motor vehicle by him to be dangerous to the public. The draft Bill also provides that in certain circumstances such a person may claim to be subjected to a test as to his fitness or ability to drive a motor vehicle.

Messrs. Baillière, Tindall and Cox will publish on April 5th a book entitled "Lister as I Knew Him," by Dr. J. R. Leeson, who is one of the few survivors who worked under Lord Lister in Edinburgh in the early days of antiseptic surgery. The book will consist of 250 pages, with numerous illustrations and a portrait of Lord Lister.

NEW LODGING-HOUSE FOR WOMEN.—The first Cecil House, to which reference was made in a leading article last week (THE LANCET, March 26th, p. 659) was opened by the Lord Mayor of London at 35, Devonshire-street, Theobald's-road, Bloomsbury, on March 28th. The house has been acquired, adapted, and equipped at a cost of £3800, and contains 45 beds for which a charge of 1s. a night will be made. These are in nine rooms on three floors; the two smallest have each only one bed, and will be kept for women with babies. The house has a comfortable sitting-room, a bath, and two foot-baths with a constant supply of water, and arrangements are made which allow lodgers to wash their clothes. Besides these facilities, the fee of 1s. includes tea and biscuits in the morning. The house will be open every evening at 8, and though women may apply on consecutive nights they cannot secure accommodation in advance. It is hoped that six lodgings of this kind will be opened in London, and since the campaign was started last October the sum of £8614 has been raised towards their establishment.

Medical News.

UNIVERSITY OF OXFORD.—A Radcliffe Travelling Fellowship has been awarded to Mr. Thomas Cecil Hunt, B.M. Dr. Hunt was an open scholar at Magdalen College; he obtained the Theodore Williams Scholarship in Human Anatomy in 1922, the Theodore Williams Scholarship in Pathology in 1924, and the Radcliffe Scholarship in Pharmacology in 1924.—Mr. Bernard Warren Williams, B.M., F.R.C.S. Eng., has been elected to the Radcliffe Prize for a thesis on the Importance of Toxæmia due to Anaerobic Organisms in Intestinal Obstruction and Peritonitis. Both Fellowship and Prize are in the gift of the Master and Fellows of University College.

UNIVERSITY OF LONDON.—At a meeting of the Senate held on March 23rd the Vice-Chancellor, Sir William Beveridge, being in the chair, Mr. W. E. Le Gros Clark, F.R.C.S. Eng., was appointed to the University Chair of Anatomy, and Dr. Hamilton Hartridge, F.R.S., to the University Chair of Physiology, tenable at St. Bartholomew's Hospital Medical School. Both appointments will date from Sept. 1st, 1927.

Mr. Le Gros Clark was appointed in 1924 to the University Readership in Anatomy, tenable at St. Bartholomew's Hospital, and in the same year was awarded the Hunterian Medal for Anatomical Research and was elected a member of the Board of Examiners for the Fellowship of the Royal College of Surgeons of England. In 1925 he was elected a member of the Prosectorial Committee of the Zoological Society and of the Council of the Anatomical Society.

Dr. Hartridge has been a Fellow of King's College, Cambridge, since 1912, and was awarded the Horton Smith Prize in 1918. Since 1919 he has been lecturer on Organs of Special Sense and Senior Demonstrator in Physiology at the Physiology Laboratories, Cambridge. He has examined for the Universities of Cambridge and Sheffield.

SOCIETY OF APOTHECARIES OF LONDON.—At recent examinations the following candidates were successful in the undermentioned subjects:—

Surgery.—J. De Rosa, London Hosp.; J. A. Fernandez, St. Bart.'s Hosp.; R. Kahn and A. M. A. Moore, London Hosp.; R. C. Pratt, Birmingham; S. Slotar, Guy's Hosp.; and W. G. H. Warner, St. Mary's Hosp.

Medicine.—G. W. Ayres, St. Mary's Hosp.

Forensic Medicine.—G. W. Ayres, St. Mary's Hosp.; A. C. F. Barrow, Edinburgh; L. J. Lawrie, London Hosp.; G. C. Rhys-Jones, Charing Cross Hosp.; and H. N. Walker, St. Bart.'s Hosp.

Midwifery.—A. C. F. Barrow, Edinburgh; W. H. Collins, London Hosp.; L. J. Corbett, St. Mary's Hosp.; S. Goldman, London Hosp.; H. H. Lakin, Birmingham and London Hosp.; and W. D. Neill and S. le R. Switzer, London Hosp.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: G. W. Ayres, A. C. F. Barrow, J. De Rosa, R. Kahn, and H. N. Walker.

UNIVERSITY OF LIVERPOOL.—At recent examinations the following candidates were approved:—

FINAL EXAMINATION FOR M.B. AND CH.B. DEGREES.

Part I.—R. K. Bowes (with distinction), Gladys A. Coventry, J. H. St. B. Crosby, A. Dala, H. R. Dugdale, R. A. Furniss, K. Jilani, E. W. Jones, Mary G. Jones, T. Lotter, Hilda M. C. MacMahon-Garry, J. S. Mather, G. W. Molyneux, Elizabeth B. Robson, J. L. A. Webster, and F. J. Welton.

Part II.—I. Lipschitz.

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.

G. Friedland, R. W. Gemmell, T. Harrison, Agnes B. MacGregor and A. M. Robertson.

UNIVERSITY OF ABERDEEN.—At a graduation ceremony on March 23rd the honorary degree of LL.D. was conferred on Prof. Matthew Hay, Sir Frederick Gowland Hopkins, F.R.S., and Sir William Milligan. The following degrees were also conferred:—

M.D.—Philip Bayer (awarded commendation for thesis).

D.Sc.—Lieut.-Colonel A. G. McKendrick, M.B.

M.B., Ch.B.—*Wilfrid Marshall and *A. S. Paterson (with second-class honours), G. J. Allan, A. W. Badenoch, John Barclay, Catherine I. A. Craig, J. G. H. Davidson, R. G. Dingwall, P. T. J. Doss, A. D. Duff, G. A. P. Fraser, J. M. C. Gill, John Leiper, J. W. Lobban, *N. J. R. Logie, *H. G. McPherson, C. P. Mann, N. G. Marr, J. R. Moir, J. H. Otty, Mary Riddoch, C. C. Ross, C. G. Walker, L. G. Walters.

D.P.H.—Jessie R. G. Dingwall, John Innes.

* Completed Final Medical Professional Examination with distinction.

UNIVERSITY OF GLASGOW.—Among the recipients of the honorary degree of LL.D., to be conferred at the June Graduation will be Sir Charles Ballance, consulting surgeon to St. Thomas's Hospital.

COMMITTEE FOR SCIENTIFIC AND INDUSTRIAL RESEARCH.—The King in Council has appointed Mr. Henry Thomas Tizard to be Secretary to the Committee of the Privy Council for Scientific and Industrial Research on the retirement of Sir H. Frank Heath from that office on June 1st next.

SOCIETY FOR THE STUDY OF INEBRIETY.—The annual meeting of this Society will be held in the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, London, W., on Tuesday, April 12th, at 4 P.M. (tea and coffee at 3.45). Dr. R. W. Branthwaite will open a discussion on the Inebriates Act of 1898.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society will be held at the Miller General Hospital, Greenwich, on Friday, April 8th, at 8.45 P.M., when Dr. H. C. Cameron will give an address on Common Neuroses of Childhood.

WEST END HOSPITAL FOR NERVOUS DISEASES. The Savill (Memorial) Oration will be delivered by Dr. Gordon M. Holmes on Thursday, April 21st, at 5 P.M., at the House of the Royal Society of Medicine, 1, Wimpole-street, London, W. 1. Dr. R. Percy Smith will preside and the subject of the Oration will be Local Epilepsy. The attendance of members of the profession and medical students is invited. The hospital also announces that the Savill Prize (value £15) for a post-graduate thesis on a neurological subject will be awarded this year. Particulars may be had from the Secretary.

ROYAL SANITARY INSTITUTE.—A sessional meeting will be held on Friday, April 8th, at 5 P.M., in the Arts Theatre of the University, Liverpool, when a discussion on Rheumatic Affections in Children will be opened by Dr. Dingwall Fordyce. There will also be a discussion on the Liverpool Main Drainage System. Dr. G. F. Buchan will take the chair. Those proposing to attend the session should notify Dr. A. A. Mussen, Public Health Department, Municipal Buildings, Dale-street, Liverpool, not later than April 3rd.

LECTURES ON INFANT CARE.—Under the auspices of the National Association for the Prevention of Infant Mortality a course of lectures for health visitors, nurses, midwives, and superintendents of infant welfare centres will be given at the Infants Hospital, Vincent-square, Westminster, from 6.30 to 7.30 P.M., on Mondays from April 11th to June 27th. The lecturers include Dr. C. K. Hamilton, Dr. Eric Pritchard, Dr. Henry MacCormac, Mr. A. H. Todd, Dr. A. F. Tredgold, Mr. Philip Franklin, Dr. C.W. Hutt, Dr. Muriel Radford, and Dr. Donald Paterson. Tickets are obtainable from the Secretary of the Association at 117, Piccadilly, London, W.

THE Royal Association in aid of the Deaf and Dumb are shortly opening a small maternity home for the unmarried deaf and dumb mother and her child; the Home will be in London but deaf and dumb girls in need of such a home will be admitted from any part of England. Mrs. Campbell Dodgson held a meeting at 22, Montagu-square on March 24th in aid of this Home. The Chairman, the Dean of St. Paul's, and the two speakers, Miss Higson and Miss Spooner, emphasised the special need of these deaf and dumb girls and the impossibility of their receiving adequate help in the homes for the hearing. They need the care of workers trained to understand them and whom they can understand, and this the Home will provide. Contributions towards the Home will be gratefully received by the Treasurer, Royal Association in Aid of the Deaf and Dumb, 413, Oxford-street, W.1, and should be marked "Maternity Home."

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—The Fellowship is affiliated with some 50 hospitals in London which provide a general course of instruction. Detailed information about their daily practice is supplied in diary form by the Fellowship and a comprehensive ticket for this general course is issued for any period from one week to one year, at a scale of fees ranging from 2 to 20 guineas, according to the period required. As the Easter vacation falls in the middle of April the special courses arranged for this month will not begin until the last week. The Royal Waterloo Hospital will provide a comprehensive course in medicine, surgery, and gynæcology. Lecture-demonstrations will be given by the staff in the wards and out-patient departments (fee £3 3s.). A series of eight lecture-demonstrations on tropical medicine will be given on Tuesdays and Thursdays at 2 P.M. at the London School of Tropical Medicine beginning April 27th (fee £2 2s.). Dr. Heald will give a series of four lecture-demonstrations on successive Wednesdays at the Royal Free Hospital at 5.15 P.M. beginning on April 27th (fee £1 1s.). Copies of all syllabuses and of the *Post-Graduate Medical Journal* are obtainable from the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

UNIVERSITY OF ADELAIDE.—Dr. H. H. Woollard, Teacher of Anatomy at University College, London, has been appointed to be Professor of Anatomy at Adelaide University, in succession to Dr. F. Wood Jones.

ROYAL NORTHERN HOSPITAL.—A relatively small growth in the number of in-patients last year was accompanied by a large increase in the number of out-patients. The X ray department is being rebuilt at a cost of £3600. The coal strike cost the hospital at least £1500.

COST OF HOSPITAL TREATMENT.—According to the annual report of the Coventry and Warwickshire Hospital, the average cost of an in-patient last year was £6 16s. 3d., an increase of 5s. 3d. on the preceding year. Ten per cent. of the deaths were in accident cases, and of the income of £40,000, £998 came from Approved Societies.

ROYAL VICTORIA HOSPITAL, BELFAST.—Last year, the first since the recent enlargement, the total number of patients increased by more than 4000, and on a recent day 1230 patients were treated. The cost per bed has fallen by £14. Prof. J. A. Lindsay has retired from the chairmanship of the board of management, and is being succeeded by the Marquis of Dufferin and Ava.

NEW ZEALAND MENTAL HOSPITALS.—The New Zealand Government has appointed to its mental hospitals department Dr. H. D. Hayes, of Hanwell Mental Hospital: Dr. J. P. Waters, neurological specialist to the Central Boards of the Ministry of Pensions in London; and Dr. T. W. J. Childs, Ministry of Pensions Mental Hospital, Kirkburton, Huddersfield.

ROYAL HOSPITAL FOR SICK CHILDREN, GLASGOW.—It is proposed to extend the country branch of this hospital at an estimated cost of £32,500. At the annual meeting it was intimated that only £10,000 more now remained to be raised in order to secure the gift of £17,500 from the trustees of the late Mr. Peter Coats. This is only one of many large hospital extensions now proceeding in Scotland; the demand everywhere is for increased hospital accommodation.

AN OVERCROWDED PORTSMOUTH HOSPITAL.—The pressure, always serious, upon the accommodation of the Royal Portsmouth Hospital has lately been increased by the longer period during which patients are retained. Thus on a recent day 26 of the 175 patients had been in the hospital for two months or more, and the average stay is half a day longer than in 1925. Had the average stay not been increased it would have been possible to receive 75 more patients, which practically represents the waiting-list.

BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL.—This institution is in urgent need of enlargement, but the present site will not permit of extensions, and proposals have been placed before the Hospital Council for its inclusion in the proposed Hospital Centre at Bournbrook. Meanwhile the Ludgate Hill ward for children has been set aside for private paying cases. The hospital has no X ray installation, and is spending £250 a year on sending out cases to have X ray photographs taken.

JOINT TUBERCULOSIS COUNCIL.—The Council has arranged for a post-graduate course on tuberculosis to be held in Copenhagen in May next. Dr. Axel Reyn has undertaken to arrange the course which will be largely of a clinical nature; members may look forward to seeing much of the work of the Finsen Institute, and there will be opportunities of visiting the various hospitals in Copenhagen. Those attending the course will leave Harwich on Saturday, May 7th, and return to Harwich on Saturday, May 21st. The approximate fare per person (for a party) will be £25, covering travel tickets, meals, hotel accommodation, and gratuities. An application has been made to the Minister of Health to allow this course to rank for grant. Further details may be had from the hon. secretary, post-graduate courses, The Larches, Farnham Royal, Bucks.

COMPLIMENTARY DINNER TO DR RUSSELL ANDREWS. On March 22nd, at the invitation of Mr. Comyns Berkeley, twenty-eight personal friends met Dr. Russell Andrews at the Garrick Club to bid him God speed on his retirement from practice. The company included Dr. J. B. Banister, Dr. J. D. Barris, Dr. E. Bellingham Smith, Sir George Blacker, Mr. Victor Bonney, Mr. A. W. Bourne, Dr. G. Darwall Smith, Mr. S. Dodd, Dr. M. Donaldson, Dr. T. W. Eden, Dr. J. S. Fairbairn, Dr. J. P. Hedley, Mr. Eardley Holland, Dr. Victor Lack, Dr. S. Gordon Luker, Sir Ewen Maclean, Dr. A. C. Palmer, Dr. F. L. Provis, Mr. L. C. Rivett, Sir Henry Simson, Dr. T. G. Stevens, Mr. Clifford White, Dr. J. A. Willett, Dr. J. M. Wyatt, and Sir Hugh Rigby and Dr. Lewis Smith, who joined the London Hospital in the same year as Dr. Russell Andrews. Dr. Eden proposed in fitting terms the health, long life, and happiness of Dr. Russell Andrews, which was drunk with the greatest enthusiasm, after which Dr. Russell Andrews replied.

MEDICAL GOLFING SOCIETY.—The Knock-out Tournament of this society has now reached its semi-final stage, which will be played by J. Cunning, J. Everidge, E. Playfair, and E. N. Plummer.

CONFERENCE ON VIVISECTION.—The British Medical Association is calling a conference, to be held at its house in Tavistock-square, London, on April 4th, with the object of showing what attitude is taken up by medical and allied bodies on the subject of vivisection.

TYPHOID FEVER EPIDEMIC.—It is reported that an epidemic of typhoid fever has broken out in the Newmill and Holmfirth district of the Holme Valley, near Huddersfield. Thirteen cases have occurred at Newmill and six at Holmfirth.

LISTER CENTENARY AT PHILADELPHIA.—On April 6th a meeting of the College of Physicians of Philadelphia will be held to celebrate the centenary of Lord Lister. Addresses will be given by Sir Esme Howard, the British Ambassador to Washington, and by Mr. Astley P. C. Ashhurst, surgeon to the Episcopal Hospital.

FRESH AIR SCHOOL AT GRIMSBY.—A new council school, which has cost approximately £22,000, was opened at Victoria-street, Grimsby, on March 24th. It is so constructed that in fine weather practically the whole of the building can be thrown open to the fresh air. It has accommodation for 300 girls and 250 infants.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, April 4th.—8.30 P.M., SOCIAL EVENING.

TUESDAY.—5.30 P.M., ORTHOPÆDICS. (Cases at 4.30 P.M.). Mr. R. C. Elmslie: Two Cases of Spastic Paralysis Associated with Scoliosis. Mr. Alan Todd: Case of ? Periostitis of Metatarsal. Other cases will be shown.

WEDNESDAY, April 6th.—8 P.M., ODONTOLOGY, DISEASE IN CHILDREN. Special joint discussion: Oral Manifestations of General Disease in Children. Openers: Mr. A. T. Pitts (Odontology). Dr. Robert Hutchison (Disease in Children).

WEDNESDAY.—8 P.M. (for 8.15 P.M.), TROPICAL DISEASES AND PARASITOLOGY. Laboratory meeting at the London School of Hygiene and Tropical Medicine, 23, Endsleigh-gardens (Euston-square), W.C. 1. Paper: Prof. W. Robinson: Some Features of Crown Gall in Plants in Reference to Comparisons with Cancer. This will be followed by a demonstration of laboratory exhibits illustrating crown gall, and recent developments in tropical diseases and parasitology.

THURSDAY.—5 P.M., GENERAL MEETING OF FELLOWS. Special Discussion on Bloodletting. Opening speakers: Mr. Walter G. Spencer, Dr. Herbert French, Dr. Fortescue Fox.

FRIDAY.—5 P.M., LARYNGOLOGY. (Cases at 4 P.M.). Cases and Specimens will be shown by Mr. J. A. Gibb, Mr. Harold Kisch, Dr. T. B. Jobson, Mr. T. B. Layton, Mr. A. J. Hutchison, Dr. A. L. Macleod, Mr. Norman Patterson. 8.30 P.M., ELECTRO-THERAPEUTICS. Papers: Prof. S. Russ and Miss G. M. Scott: The Growth of Tumours in Tissues exposed to X Rays and Radium. The Action of Radon Seeds upon Tumours and Some Normal Tissues of the Rat. Dr. J. C. Mottram: On the Co-relation Between the Experimental and Clinical Radiation of Tumours.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

MONDAY, April 4th.—5 P.M., Mr. C. E. Shattock: Large Intestine.

FRIDAY, 5 P.M., Prof. Sir Arthur Keith: The Anatomy and Physiology of the Cæcum and Appendix Vermiformis.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, April 7th.—4 P.M., Dr. Pearson: Vomiting in Pregnancy.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, April 4th.—10 A.M., Surgical Clinic. 2 P.M., Medical Cases in the Wards. 2.30 P.M. to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 P.M. to 5 P.M., Medical, Surgical, Throat, Nose, and Ear Clinics. Operations.

WEDNESDAY.—2.30 P.M. to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinic. 2.30 P.M. to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose, and Ear Clinics. 2.30 P.M. to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

Also on FRIDAY, April 8th, at 4.30 P.M., Dr. L. R. Yealland will demonstrate on Selected Cases of Nerve Disease.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, April 4th, to SATURDAY, April 10th.—QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E. All day course, the chief feature of which is the showing of cases. ROYAL EYE HOSPITAL, Southwark, S.E. Afternoon demonstrations on the diagnosis and treatment of diseases of the eye. Further information from the Secretary.

PEOPLE'S LEAGUE OF HEALTH. (Sims Woodhead Health Lectures.)

MONDAY, April 4th.—6 P.M. (at the Medical Society of London, 11, Chandos-street, W.), Dr. H. Crichton-Miller: Development and Function of Mind.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, April 8th.—4 P.M., Dr. Andrew Wylie: Tuberculosis of the Larynx.

ST. MARGARET'S HOSPITAL FOR WOMEN, Acomb-street, Whitworth Park, Manchester.

WEDNESDAY, April 6th.—12 noon, Mr. A. C. Magian: Ovarian Grafting demonstration.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE LECTURES.

TUESDAY, April 5th.—4.15 P.M., Dr. C. H. Melland: Epidemic Encephalitis, Acute and Chronic.

FRIDAY.—4.15 P.M., Dr. A. Ramsbottom: Demonstration of Medical Cases.

ST. MARY'S HOSPITALS, MANCHESTER. POST-GRADUATE LECTURE.

FRIDAY, April 8th.—4.30 P.M. (at the Whitworth-street West Branch), Dr. W. R. Addis: Induction of Labour.

ANCOATS HOSPITAL, POST-GRADUATE LECTURES, Mill-street, Manchester.

THURSDAY, April 7th.—4.15 P.M., Dr. W. J. S. Reid: Tabes Dorsalis.

Appointments.

SOURASKY, M., M.D. Leeds, F.R.C.S. Edin., has been appointed Assistant Surgeon in the Ear, Nose, and Throat Department of the London Jewish Hospital.

Certifying Surgeons under the Factory and Workshop Acts: VINES, S. K., L.R.C.P. Edin., L.M.R.C.P.I. (Allendale); WELLS, J., M.R.C.S., L.R.C.P. Lond. (Bilston); KEITH, F. L., M.D. Aberd., Medical Officer of Health of Bethnal Green.

Vacancies.

For further information refer to the advertisement columns.

Beit Memorial Fellowship for Medical Research.—Fellowships.
Belgrave Hospital for Children, Clapham-road, S.W.—Hon. Radiologist. 50 guineas.
Birmingham and Midland Eye Hospital.—Res. Surg. O. £150.
Cambridge, Addenbrooke's Hospital.—H.S. At rate of £150. Also Cas. O. and Res. Anæsthetist. At rate of £130.
Canterbury, Borough Mental Hospital.—Asst. M.O. £300.
Charing Cross Hospital, Institute of Pathology, 62–65, Chandos-street, Strand, W.C.—Asst. Pathologist. £500 for first six months.
Chester Royal Infirmary.—H.S. £150.
Derbyshire, Royal Infirmary, Derby.—H.P. and Asst. H.S., and Cas. O. Each at rate of £150.
Dover, Royal Victoria Hospital—H.S. £180.
Exeter, Royal Devon and Exeter Hospital.—Res. Cas. O. At rate of £100.
Gravesend and North Kent Hospital.—Jun. H.S. £150.
Grimsby and District Hospital.—Sec. Supt. £300.
Guildford, Royal Surrey County Hospital, H.S. £150.
Halifax, Royal Halifax Infirmary.—Third H.S. £100.
Hampstead General and North West London Hospital, Haverstock Hill, N.W.—H.S., H.P., and Cas. M.O. Each at rate of £100.
Hospital for Consumption and Diseases of Chest, Brompton, S.W.—H.P.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res. M.O. and H.P. At rate of £150 and £100 respectively. Also Hon. Gynæcologist.
Leeds, Gateforth Sanatorium.—Res. M.O. £400.
Leicester Royal Infirmary.—Hon. S. to Ear, Nose, and Throat Dept.
Manchester, Ancoats Hospital.—H.S. for Orthopædic Dept. At rate of £100.
Manchester Royal Infirmary.—Res. Surg. O. £200.
Manchester, Victoria Memorial Jewish Hospital, Hon. Surg. Also Sen. H.S. £250.
Manor House Hospital, Golders Green, N.W.—H.S. At rate of £200.
Metropolitan Hospital, Kingsland-road, E.—H.P.'s., H.S.'s., and Two Cas. O.'s. At rate of £100.
Mount Vernon Hospital for Diseases of Chest, Northwood, Middlesex.—Asst. Res. M.O. At rate of £250.
Northumberland County Council and Urban District Council of Newburn.—Asst. County M.O.H., &c. £700.
Norwich, Norfolk and Norwich Hospital.—H.S. £120.
Perth, James Murray's Royal Asylum.—Asst. P. £300.
Portsmouth, St. Mary's Infirmary, &c.—First Asst. Res. M.O. £350.
Prince of Wales's General Hospital, Tottenham, N.—Two Hon. Anæsthetists. Each £40.
Princess Louise Kensington Hospital for Children, N. Kensington.—One P., Two Asst. P.'s, Two S.'s. and Two Asst. S.'s. &c.
Putney Hospital., Lower Common, Putney, S.W.—Res. M.O. £150.
Redhill, Surrey, Royal Earlswood Institution.—Jun. Asst. M.O. At rate of £250.
Richmond Royal Hospital.—Asst. H.S. At rate of £100.
Royal Chest Hospital, City-road, E.C.—H.P. At rate of £100. Also Res. M.O. At rate of £150.
St. Albans, Herts, Hill End Mental Hospital.—Third Asst. M.O. and Pathologist. £450.
St. John's Hospital, Lewisham, S.E.—Res. Cas. O. At rate of £100.
Sheffield Royal Infirmary.—H.S. At rate of £80.
Stockton-on-Tees, Stockton and Thornaby Hospital.—Hon. S. to Ear, Nose, and Throat, Dept.
University of London, South Kensington, S.W.—Chair of Anatomy, £1000.
Ventnor, Isle of Wight, Royal National Hospital for Consumption.—Med. Supt. £1000.
Walthamstow, Wanstead, and Leyton Children's and General Hospital.—Sen. Res. H.S. and Jun. Res. H.S. At rate of £150 and £100 respectively.
Weir Hospital Grove-road, Balham, S.W.—Jun. Res. M.O. £100.
West End Hospital for Nervous Diseases, 73, Welbeck-street, W.—Cas. P. £200.

The Chief Inspector of Factories announces the following vacant appointments for Certifying Factory Surgeons: Matlock (Derbyshire, Buckhaven (Fifeshire), and Sedbergh (Yorks, West Riding).

Births, Marriages, and Deaths.

BIRTHS.

CHEYNE.—On March 22nd, at Quinton Lodge, Leamington Spa, the wife of Dr. A. I. Cheyne of a son (stillborn).
COXON.—On March 22nd, the wife of Cedric Coxon, M.B., Dersingham, of a son.
DAVIES.—On March 20th, at Tavistock House, Haywards Heath, the wife of Dr. J. H. Twiston Davies, of a son.
LEAK.—On March 22nd, at Dingle House, Winsford, Cheshire, the wife of Dr. W. Norman Leak of a son (John).
SCHLESINGER.—On March 26th, at Hollycroft-avenue, London, the wife of Dr. Bernard Schlesinger of a daughter.

MARRIAGES.

CRESWELL—TURTON.—On Jan. 15th, at Vryheid, Natal, Harry Edmund Creswell, M.C., M.B., B.Ch. Cantab., M.R.C.S.Eng., M.R.C.P. Lond., to Amy Joyce, youngest daughter of the late Frank Turton, Esq., of Hayfields, Glencoe, Natal.
PATERSON—GIBSON.—On March 22nd, at Christ Church, Bournemouth, Archibald Richard Paterson, M.D., to Gladys Violet, youngest daughter of the late Edward Gibson, of Parkstone.

DEATHS.

BROWNLEE.—On March 20th, at Spencer-road, Twickenham, Dr. John Brownlee, M.D., D.P.H., Statistician to the National Medical Research Committee.
HASLAM.—On March 15th, at St. Winnows, Bromley, Kent, Arthur Charles Haslam, aged 54.
POLLARD.—On March 21st, at his residence, Upper Hamilton-terrace, Joseph Pollard, M.A., M.R.C.S.
STOVIN.—On March 20th, very suddenly, at a nursing home, Yeovil, Somerset, Cornelius Frederick Stovin, M.A. Oxf., L.S.A., D.P.H., aged 64.
WHITE.—On March 21st, at Rake's Halt, Cove, Bampton, Devon, Colonel William Westropp White, C.B., C.M.G., M.D., I.M.S. (retired.), aged 64.
WONNACOTT.—On March 22nd, suddenly, at Neville-court, Grove End-road, N.W., R. R. Howard Wonnacott, M.R.C.S., L.R.C.P., aged 60.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE CHRONIC RHEUMATIC DISEASES.*

BY CAREY F. COOMBS, M.D., F.R.C.P. LOND.,
PHYSICIAN WITH CHARGE OF OUT-PATIENTS, BRISTOL GENERAL HOSPITAL.

BETWEEN the various maladies which may still be included within the omnibus title of Chronic Rheumatic Diseases there is more diversity than similarity. The one thing common to them all is pain limiting and interrupting the movements of the limbs and trunk. That is what the patient complains of, and as the first rule of treatment is to remove the cause, it follows that ever since patients began to complain of rheumatic pains physicians have been searching for causes. In many instances these have been found, and certain categories of articular crippling have been lifted wholesale out of the general assemblage of disorders labelled rheumatic. For example, there are the arthropathies that accompany organic disease of the central nervous system such as locomotor ataxia, and those other crippling changes in joints that may arise as a result of chronic infections of the lung.

No well-informed person would nowadays think of describing these as rheumatic. Then there are other orders of articular disease which are emerging from the rheumatic pool. Let us glance for a moment at two of these—chronic gout and gonococcal arthritis. The first point of similarity between them is that each possesses its own peculiar symptomatology, although in each case the clinical picture may so far imitate others that what may be termed the hedging titles, "rheumatic gout" and "gonorrhœal rheumatism," are still employed, even by those who ought to know better.

The second point is that in each instance the discernment of a clinical individuality, that of chronic gout on the one hand and of gonococcal arthritis on the other, has made it easier, one might almost say made it possible, to discover behind the characteristic clinical picture a definite causation. In the case of gout we have a disorder of the internal chemistry, with a strong hereditary factor and an even stronger connexion with certain forms of dietetic excess. Gonococcal arthritis, on the other hand, is due, as its name indicates, to a generalisation throughout the body of the specific microbe of gonorrhœa.

A third and highly significant point of similarity between these two diseases is the fact that both of them are decreasing in frequency. This decrease has been due, not to an organised campaign against gout on the one hand or gonorrhœal arthritis on the other, but rather to a recognition, first by the medical profession and then by the public, of these ætiological facts; and also to an increasing respect for dietetic temperance in the one case, and for chastity in the other.

This, then, has been the series of steps by which the incidence of certain forms of arthritis has been reduced. First, the clinical type has been defined. Second, the causation of the group has been sought and found. Third, diffusion of the knowledge of this causation has led to its prevention. Can we make use of a similar process in order to get rid of other forms of "rheumatic" disorder?

Clinical Aspects.

Let us look first of all at the clinical aspects of these disorders to see whether there is any hope of grouping them, and thus of taking the first step in tracking down their causes. It is here that the report of the Ministry of Health, to which I alluded last week, comes once more to our aid. The Committee to whom we owe that report surveyed the various classifications of rheumatic disease and eventually adopted one which recognised three main groups. With one of these, acute rheumatism, we concerned ourselves last week, and have, therefore, no need to discuss it further. The other two were the non-articular forms of rheumatic disorder and the chronic joint diseases. These, again, were subdivided, and under the latter heading were arrayed rheumatoid arthritis, osteo-arthritis, gout, and unclassifiable lesions of joints. Of these four subdivisions we have already discussed one, that of gout. Another, the group of unclassifiable lesions, need not detain us, since it is obvious that our studies of causation should end in its complete disappearance. This leaves two large and well-defined groups of chronic articular disease for our consideration. Of these two it will

* Lectures on the Causes and Prevention of Rheumatism, delivered under the Chadwick Trust. The first lecture appeared in two instalments in THE LANCET of March 12th and 19th. The second lecture (of which this is the first half) was given on March 10th, 1927.

be convenient to approach the rheumatoid group first; for it is the one more nearly allied to acute rheumatism, a disease of whose causation we know a good deal, so that we may hope to be able to reason from the known to the unknown, from the causation of the acute rheumatic infection to that of rheumatoid arthritis.

Rheumatoid Arthritis.

This malady begins to claim its victims about the age of 20 and continues to do so throughout life, as the attack-rates of the Ministry of Health's inquiry show. It is, according to Strangeways, three times as common in women as it is in men. Its symmetrical distribution is characteristic and highly suggestive of some generally diffused cause. It attacks the small joints, for example those of the hands, before it does the large ones. The changes which it induces are limited, at first at all events, to the synovial membranes and the soft parts surrounding the joints, the bones themselves being free from change till late in the disease. Its course, though tending to be progressive, is capable of arrest, and even when it progresses does so in bouts of activity separated by long periods of quiescence. In its selection of young subjects, and its preference for women, this disease is similar to the acute rheumatic infection. Many of its bouts of activity are febrile, and in this as well as in other respects the similarity to an acute or subacute outbreak of rheumatic infection may be very close. Occasionally, though not so often as we might expect, perhaps, cardiac disease develops in the patient with rheumatoid arthritis. Of very great significance is the fact that subcutaneous nodes occasionally develop in rheumatoid arthritis. These nodes, as Vincent Coates and I have shown, are exactly similar in structure to those of the rheumatic infection of childhood; and, as we saw last week, the subcutaneous node of that infection is its most individual achievement. Nothing could suggest more strongly than this does that the same kinds of organisms that are responsible for the rheumatic infection of childhood are also responsible, in some cases at any rate, for causing rheumatoid arthritis. There is, therefore, a good deal of reason for expecting to find the causation of rheumatoid arthritis somewhere near that of the rheumatic infection.

Now we have seen that in many instances the rheumatic infection appears to be the diffused and general expression of a tonsillar sepsis. This analogy has given direction to the search for causes of rheumatoid arthritis, and has lent support to a belief in the view recently crystallised in the name "focal arthritis" which my friends Drs. Thomson and Gordon of Bath propose to apply to what is generally called rheumatoid arthritis. Briefly, the theory enshrined in this term is one which regards the joint changes of rheumatoid arthritis as resulting from repeated doses of micro-organisms, or their toxins, escaping into the circulation from some focus of infection which contains and imprisons them only imperfectly. Foci of this kind are especially sought for, and in variable percentage found, in the accessible parts of the respiratory and digestive tracts, in the nasal accessory sinuses, the tonsils, and the teeth.

Now, if this were all, the treatment of rheumatoid arthritis would be no great matter. Get rid of oronasal sepsis and you would eradicate rheumatoid arthritis. But a very brief experience of this train of thought will display its limitations. The woman whose articular changes progress in spite of a liberal application of this policy, involving removal of all her teeth and a good deal of her nose, is by no means rarely encountered. It is quite obvious that there are other intermediary influences which determine whether a focus of sepsis shall or shall not be able to inflict its products on its victim's joints, and thus provoke a rheumatoid arthritis. This is proved, not only by the failure of radical treatment of sepsis to prevent arthritis, but also by the failure of untreated sepsis to cause it. The world is full of people with streptococci imprisoned within their nasal sinuses or at the apices of their teeth, yet with no lesion of joints. Moreover, how is it that in one patient the escape of streptococci from the mouth into the circulation causes rheumatoid arthritis, but in another a persistent and progressive infection of the valves of the heart? Is not the very fact that the incidence of this arthritis is so much heavier in women, a strong hint of the presence of some deep-seated biochemical influence? That other streptococcal lesion to which I have alluded—a progressive infection of the cardiac valves, or endocarditis lenta—fell, just after the war, with unusually heavy weight, on young men, and this was found to be due to a predilection for ex-soldiers. This again appeared to be traceable to the abnormal fatigue of certain forms of military service; to something, that is to say, which altered the chemistry of the body. Is it not probable that the peculiar affinity between rheumatoid arthritis and women in early middle life is also a chemical affinity? Dr. Llewellyn thinks we shall find a relation between thyroid aberrations and the rheumatic diseases; the suggestion being that a disturbed thyroid secretion may so alter the chemistry of the body as to lay it open to the assaults of microbes that would otherwise fail to inflict damage. Again, there is reason to suppose that a series of links in the chain that joins the original focus with its arthritic consequences is to be found in some peculiarity in the immunity reactions of the susceptible individual. I hesitate even to name this possibility, so vague and impalpable is it. Yet the similarity between the joint affections of serum sickness on the one hand, and those of subacute rheumatism and the acuter phases of rheumatoid arthritis on the other; and the favourable effect of introduction of foreign proteins into the body, in a controlled dosage, in some cases of rheumatoid arthritis; and many other such considerations, encourage a belief that some form of sensitiveness to unfamiliar albuminous substances is essential to the causation of rheumatoid arthritis. We have to bear in mind how closely similar are the reactions of the skin and mucous membranes on the one part, and of the synovial membranes of the joints on the other, to the introduction of foreign substances of this class.

In the whole group of exudative phenomena, ranging from nettle rash to hæmophilia through every shade and degree of purpura, that which happens in the mucous membranes and skin happens also in the joints; and many of these outbreaks we know to be due to the escape of foreign proteins, bacterial or otherwise, into the circulation. As an example I might quote the case of a young married woman who was recently under my care in the Bristol General Hospital. I first saw her in the latter part of 1925 because of recurrent attacks of swelling and stiffness in the knee-joints. These attacks would begin quite suddenly and then disappear gradually in the course of a few days. I arranged to take her into the hospital wards for investigation, but something intervened to prevent this, and I saw no more of her for about a year. Then she was sent up again, this time on account of recurrent swelling of the face, of the kind known as giant urticaria or angioneurotic œdema. On examining her throat I found both tonsils shrunken, and a long sinus in the right tonsil from which pus could be squeezed. From this pus a streptococcus was grown, and an emulsion of the culture was inoculated into her scarified skin, which showed a definite sensitiveness to the test. My colleague, Mr. John Wright, removed both tonsils very carefully and thoroughly, and it is interesting to note that this was followed immediately by a rise of temperature and a brief bout of swelling, just in that part of the face in which the urticaria had been wont to appear, and then in the knee-joints. These phenomena soon passed off; but do they not suggest that operation did, for the moment, release into the circulation toxins akin to those which had already provoked similar attacks?

I have allowed myself to go far afield in pursuit of these fascinating speculations because I want to suggest that until we have at least attempted to solve the problem of the links that join the primary focus of infection with the arthritis itself, we have no right to content ourselves with the view that there is nothing to be done save the uprooting of those foci. And, indeed, there are other reasons for caution. First it is by no means always easy to be sure where the causal focus lies. Even if the teeth sockets are infected, is it here that the organisms get in? Is it not possible that they are entering through the intestinal wall also? Is not this one explanation of the frequency with which removal of infected teeth fails to arrest the progress of an arthritis? Again, most of us can recall cases in which the progress of the disease appeared to be actually hastened by extraction of teeth or operations on sinuses; because the exposure of defenceless tissues to the causal microbes made it easier for those microbes to enter the beleaguered body. And in any case the loss of teeth or tonsils is a misfortune which can only be inflicted on a patient if we are able to promise some overtopping advantage.

I wish there were opportunity to discuss the part played by faults in the less accessible regions of the alimentary and respiratory tracts, in the causation of rheumatoid arthritis. It would serve to emphasise the need that I have tried to make plain, of more research into the nature of the idiosyncrasies which render certain persons liable to develop rheumatoid arthritis as a consequence of focal sepsis, while others equally infected remain nevertheless immune.

Osteo-arthritis.

The second subdivision of the chronic joint group of the Ministry of Health report is labelled osteo-arthritis The joint troubles that belong to this category are quite different from those of the rheumatoid arthritis group. They are seen in old people, much more often in men than in women; they tend to localise themselves in one joint rather than in many, and in big joints rather than small ones; and the lesion is one of bone rather than of synovial membrane. In all these points osteo-arthritis presents a complete contrast to rheumatoid arthritis, and on the whole this contrast is a true one, save for shades of compromise between the two groups to which I shall allude

presently. It is a remarkable thing that the joints should be liable to two types of crippling disease, widely dissimilar, yet alike in so far as joints are attacked by some progressively crippling disorder in both. We are constrained to ask why joints should be so much more liable to permanent disablement than muscles or bones are; for there is, apart from injury, scarcely any common form of progressive crippling that is concentrated in either of these structures.

The question of vulnerability of certain tissues is one which usually provokes two sorts of answers. There is the anatomical explanation which blames the exposed position of the affected part for getting it into trouble; and the physiological, which ascribes the liability of a tissue to disease to some delicacy or incessancy of function by which its cells are rendered easier to injure. In the case of the joint, the anatomical view would suggest that the blood-supply of the part is responsible. For one thing, the joints are end-points in the circulation. Around them the blood-vessels of the limb come to an end in branches which unite with each other to form anastomoses. This explains the predilection of the exudative lesions of urticaria, purpura, and so forth, for the neighbourhood of joints, and is in part responsible for the concentration of the subcutaneous node of rheumatic infection in the same region. Again, the blood passing through the synovial fringes of the joint must perforce move slowly, since the capillaries are looped sharply on themselves. As Dr. Scott Williamson once pointed out to me, this favours the escape of bacteria and toxins from the blood as it creeps sluggishly through capillaries of the membranes lining the joints. Physiologically, also, the joints are vulnerable structures, for they are continually bearing the brunt of the shocks and jars to which the limbs are necessarily subjected. They are the buffers which interpose between one segment of a limb and the next, and it is not wonderful, therefore, that after decades of use and abuse they should often manifest evidences of wear and tear. This is without doubt responsible in large part for the lesions of osteo-arthritis, just as the anatomy of the parts is largely responsible for the selection of joints, rather than other tissues, by the organisms and toxins that cause rheumatoid arthritis.

This is not to deny the possible existence of an infective factor in osteo-arthritis. Quite apart from the gross evidences of infection which can occasionally be discerned in persons suffering from osteo-arthritis, it is probable that as we grow older we gradually lose our capacity for protecting ourselves against the bacteria that our bodies entertain. You will recollect that Metchnikoff sought thus to explain the nature and distribution of the arterial changes that characterise advancing age; and if we reflect for a moment on the area exposed in the alimentary and respiratory tracts to the bacteria that infest them, we shall marvel more at the defence that the body maintains against them than at the injuries which they succeed n inflicting. Probably their toxins have a share in destroying the integrity of the joint, and the fact that both osteo-arthritis and arterial degeneration are diseases of the later decades of life may be regarded as the expression of a progressive decrease in the power of the body to resist the onslaughts of the bacteria that it carries. If we admit this, we recognise that the predominant partner in this plot against the bodily well-being is age. We are familiar with the fact that in general, infections claim their victims most easily from the two extremes of life; from infants and young children because they have not yet learnt the art of self-defence, from old people because they are losing that art. If we are asked by what mechanism this progressive reduction in the capacity to resist infection is brought about, we can only reply in general terms that the infant develops from the germ-cells by virtue of an inherent vital energy that, after he has entered on an existence separate from that of his mother, still continues for approximately one-third of his natural life to provide the impetus for growth; that this same energy appears able for the next third of his career, to make good most of his tissue losses; but that during his final third he is no longer able to do so. Cells wear out and disappear, but no new ones grow up to take their place. So it is with the component parts of his joints. It is the duty of these to bear the shocks and jars to which the human frame is subjected. As age advances, decreasing muscular power exposes the joints more and more to those minor injuries, every one of which must involve some destruction of the articular tissues. Moreover, as we have seen, the tendency of bacterial activity is to flourish more readily as advancing age furnishes a less effective opposition. On the one hand, then, the joint tissues are being more readily damaged; on the other, less effectively repaired.

What can preventive medicine do to oppose this combination of injuries? Very little, it must be confessed. Neither Act of Parliament nor any other human agency can postpone appreciably that failure in the vital energy that is the chief root of the trouble. It may be that some future generation will discover the elixir of life, and taste the joys of a protracted sojourn in the flesh; but we cannot as yet point to the smallest evidence of this, while all that we know of the past history of mankind discourages any expectation of a sensible increase in the average duration of a lifetime.

Let us return from these airy speculations to the solid ground of everyday practice, and take stock of the man who is a likely subject for osteo-arthritis. He is 60 years old; he has worked hard at some manual task; his teeth are few and evil; his bronchial tubes are permanently infected; his subcutaneous tissues are shrinking and so are his muscles. Which line are we to take? Must he submit to the removal of his teeth and to incessant attempts, foredoomed to failure, to make an end of his bronchial catarrh by the use of vaccines and other bactericidal devices? Or is the stress to be laid on an adequate supply of good air and light, with a temperate balance between work and rest? For it seems to me quite certain that too little exercise is almost as provocative of osteo-arthritis as too much. The man who allows his earliest experiences of pain in a shoulder to inhibit all movement of the arm is laying down permanent changes in that joint as surely as the man who is prompted by circumstances or temperament to ignore his pain entirely. The fact is that in the handling of osteo-arthritis, whether from the preventive or from the remedial aspect, there is ample room for common sense, but not for much else. Of all these chronic rheumatic troubles it is true, I believe, that more harm is being done by too much treatment than by too little.

(To be concluded.)

THE THERAPEUTIC VALUE OF IODINE.

WE have received from Dr. E. T. Burton, of Clevedon, a series of notes on the employment of iodine in various pathological conditions. The message which he wishes to place on record at the end of a long professional career is that iodine as a remedy in many conditions is not sufficiently recognised. After reference to the successes obtained by the external use of iodine in adenitis, a method of treatment which is now largely superseded by other measures, he writes as follows:

"I was called about three years ago to see a boy of 8 years, who had three large strumous glands protruding from the right side of his neck by the angle of the jaw. His mother said she had made an arrangement to have these glands enucleated on the following morning. The temptation was irresistible. I told her I should do what I could for the boy. I gave them some ungt. iodi denigrescens, and on the following day I found the glands reduced greatly in size, and on the third day they had disappeared. Two days after she called again to say the glands on the left side were growing. I asked if she had used the ointment. She said she had not. I asked if she had got any left. She replied, 'Plenty.' 'Well,' I said, 'go home and use it.' She called on me two days after to say the glands had quite gone."

Other successes with iodine that have stayed in his memory include the use of iodine ointment in a rheumatic shoulder and in a case of "housemaid's knee." Of the 1918 epidemic of influenza he writes:—

"A terrible epidemic of which I think I had more than my share of cases. In each case on the first indication of pneumonia I had the patient's chest well rubbed with ungt. iodi denigrescens, fitted with a Gamgee jacket and given a cough mixture which contained, in each dose of an ounce, 10 grains of iodide of potassium; I prescribed a diet of milk and bovril, and, when necessary, small doses of pure *malt* whiskey."

A wise little note is appended with regard to the purity of the spirit.

Dr. Burton was for 54 years Surgeon to the Birmingham district of the Great Western Provident Society, and is critical of the National Insurance Act which brought this side of his professional work to a close. He had many opportunities during that long period of observing the beneficial effects of iodine in superficial lesions. He had 600 men to deal with and all varieties of injury, especially among carmen whose ulcerations were caused by the handling of packages of all sorts, sometimes containing such dangerous material as hides. Under his treatment he cannot remember that any abscess ever occurred; he ventures the question whether the external use of iodine might not be of service in the vesicular stage of small pox, being here reminiscent of the horrors of an epidemic of this disease which occurred in 1872, when he was the single-handed superintendent of an institution with 150 beds.

His last note is a strictly personal one. Referring back to the substitution of iodine in cervical adenitis for surgical measures, he writes that no man has better reason than himself to award the highest praise to the skilful surgeon inasmuch as he owes his life to a successful operation performed upon him in his eighty-third year by Sir Gilbert Barling. With Sir Gilbert Barling's permission he treated the superficial suppuration which attended the wound with iodine ointment, and this proved a great success.

NEW PREPARATIONS.

The MONSOL preparations are the result of an industrial process invented by the late Dr. Ludwig Mond, and investigations have shown that while they contain the germicidal properties of phenol they are free from toxic or irritating effects. The preparations are presented to the profession in four forms: a liquid for external inflammatory conditions, an ointment for use in antiseptic dressings, capsules for alimentary disorders, and pastilles, designed for slow solution in the mouth, and directed to conditions in the pharynx or larynx. The liquid can be diluted according to whether it is required for irrigations, sprays, dressings, packings, or tampons, while a solution of 1 in 20 Monsol can be used for cleaning instruments. As a general strength 1 in 200 is suggested. The ointment has been found useful in conditions where a bland protective dressing is desirable, and here the antiseptic and germicidal properties will have value to the dermatologist. The capsules contain a germicidal equivalent of 120 minims of pure phenol, are tasteless, and are recommended in many toxic conditions of the bowel. The Monsol preparations may be obtained from the Mond Staffordshire Refining Co., Ltd., 147, Victoria-street, London, S.W. 1.

(1) TRICALCINE; (2) PEPTALMINE.—From the Scienta Products Laboratory in Paris we have received specimens of various cachets of Tricalcine, a drug designed for use in conditions where the mineral elements of the body are deficient. The importance to the economy of salts of lime does not need insisting upon, but tricalcine can only be of service if calcium, contained in assimilable form, is administered in connexion with strict dietetic treatment—acid foods must be vetoed, the amount of fat and bread taken reduced, and there should be a strict limitation of alcohol. The cachets are supplied pure or "adrenalinated" (containing 3 drops of 1:1000 adrenalin solution in each cachet) or "methylarsinated" (containing 1 centigramme of pure methylarsinate of sodium in each cachet) or "fluorated" (containing 2 centigrammes of fluoride of calcium in each cachet); and the suggested dose in each case is 1 cachet three times a day just before food. It should be added that the use of tricalcine in dental practice is a feature of the manufacturers' claims.

From the same laboratory we have received two specimens of a drug termed Peptalmine for which it is particularly claimed that it will be of value in the forms of migraine of anaphylactic origin which have been made the especial subject of investigation by Widal, Richet and others. It is supplied in granules or sugar-coated capsules and contains the peptones of meat and fish, with extracts of eggs and milk. These two preparations may be obtained from Wilcox, Jozeau, and Co., 15, Gt. St. Andrew-street, W.C. 2.

MIDWIFERY IN HONG-KONG.

THE clinical report of the School of Midwifery and Gynæcology of the University of Hong-Kong for the year ending April, 1926, is a record of successful pioneer work, carried out under the usual difficulties, in raising the standard of efficiency of midwives and lying-in hospitals. The work of the University clinic is greatly hampered by lack of space and shortage of nurses. 463 patients were delivered in the 12 months; there were 5 deaths, 5 miscarriages, and 36 "morbid" cases. Unfortunately, it is very hard to persuade Chinese mothers to remain in hospital more than three or four days. Induction of labour was performed twice, once on an insane woman and once in order to persuade a patient whose urine was nearly solid with albumin to remain in hospital. Full statistics are given in the report which was published in the *Caduceus* for November last. Discussing the difficulty of getting nursing help, Prof. R. E. Tottenham expresses the opinion that it would be worth while sending a few Chinese girls to a big teaching hospital in Europe so that they could form the nucleus of a Chinese staff.

THE AMBULANCE TRAINS OF 1914.

A PAMPHLET written shortly after the war by Colonel G. A. Moore, Deputy Chief Commissioner St. John Ambulance Brigade, has been reissued.[1] It deals with the early days of our ambulance trains in France, was first published by Colonel Moore under the pseudonym of "Wagonlit," and was dedicated to the whole personnel who made and manned the ambulance trains in which tens of thousands of our sick and wounded were transported to the base in such comfort as could be devised in the opening weeks of the struggle. When the first six detachments of ambulance men found themselves marching over the cobbled pavements of Boulogne a little more than a week after the declaration of war, there was not a single motor ambulance fitted railway coach available in the whole of France. This contingency, fortunately, the British War Office had foreseen and to some extent provided against by ingenious apparatus and makeshifts. Colonel Moore describes how the pioneers of the British Ambulance Train Service, 300 in number, began the work which was to have such splendid results, and so lustily did they struggle that in three weeks from arrival in France three ambulance trains had steamed to the front while a fourth was in hand. From that point the experiences of the Ambulance Service, under the fluctuating and mostly ill-fortunes of the early days of the war, are clearly set down, among these being the dramatic occasion when, in the third week of September, the strain on all services was overpowering, and the personnel of the Service was hopelessly short, four sergeants and four privates, all qualified doctors, as well as certain medical students, with the regimental surgeon stepped out of the ranks of the London Scottish where they had enlisted. This is a stirring record of the work done by doctors, students, and nursing sisters on those early ambulance trains, and Colonel Moore admits that his words "do not really describe their untiring energy, skill, and devotion to the 67,000 of England's best who travelled to sea bases in France between August, 1914, and April, 1915, on the 'First Twelve Ambulance Trains.'"

[1] The Birth and Early Days of our Ambulance Trains in France in August, 1914. With 5 illustrations. By Colonel G. A. Moore, C.M.G., D.S.O., M.D. (A.M.S. retd.). John Bale, Sons and Danielsson, Ltd. 1s.

THE RED CROSS IN JAPAN.

THE second Oriental Red Cross Conference recently held at Tokyo was attended by ministers and members of the Japanese Royal Family. The Red Cross is well supported in Japan, for two and a half of the 80 million inhabitants belong to it; there are a million members of the Junior Red Cross, and the annual revenue exceeds £800,000. The meetings were held under the joint presidency of Baron Hiroshima, President of the Japanese Red Cross, and of Judge Payne, chairman of the League of Red Cross Societies which organised the conference. Discussion centred round the questions how by popular appeal more thoroughly to prevent disease, such as tuberculosis, how to advance child welfare, how to combat venereal diseases and the abuse of opium, and how to diminish other infectious diseases. Red Cross nurses, of whom a number have been trained at the international courses organised by the League at Bedford College, London, are highly esteemed in Japan, and are always selected for service when illness arises in the Royal Family. An impressive exhibit was that of the Imperial Institute for Research on Nutrition, housed in one wing of the new Red Cross building; in its well-arranged museum are shown wax models of foods, fresh, stale or tainted, suitable meals for different groups—e.g., working men or nursing mothers, the cost of each meal being always indicated. These, as well as models of kitchens, sanitary plumbing, and other public health exhibits, are intended to be taken round for demonstration in the provinces. Disaster relief for great calamities had its origin in Japan in 1888, when the Empress called on the Japanese Red Cross to help on the occasion of the volcanic eruption of Mount Bandai. To what extent this form of activity is being developed may be seen in the March issue of the *World's Health*, the monthly publication of the League of Red Cross Societies.

A NEW YORK CLINIC FOR CANCER.

A CAMPAIGN is said to have been started by the New York Cancer Association to collect £1,000,000 to establish an institution for treatment and study of cancer. At a cost of £700,000 the Association has acquired a twenty-seven storey building called Hudson Towers, which is to be the cancer centre, with a hospital of 400 beds, a clinic capable of caring for 500 patients a day, laboratories for research, and a department devoted to public education in the prevention of cancer. Hudson Towers was originally designed for a hospital and has been standing unfinished for some time. Most of the 400 beds will be free, or available at a nominal charge. It is estimated that there are something like 25,000 cases of cancer in the greater New York area.

THE Sandoz Chemical Works, Pharmaceutical Department, have opened new offices at 5, Wigmore-street, W. 1, for the convenience of the medical profession in London.

PASTEURISATION OF MILK.—The Health Committee of Blackpool has adopted a recommendation that all milk going into the town, apart from Certified Milk in sealed bottles, shall be pasteurised. For this purpose it should pass through a clearing house, where it should be placed in sealed bottles and then sold to consumers. The medical officer was requested to prepare a report on the medical aspect of the question.